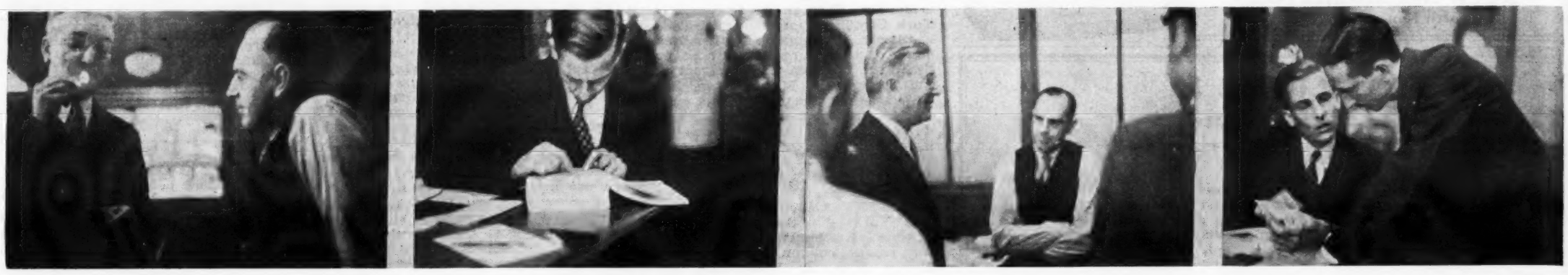
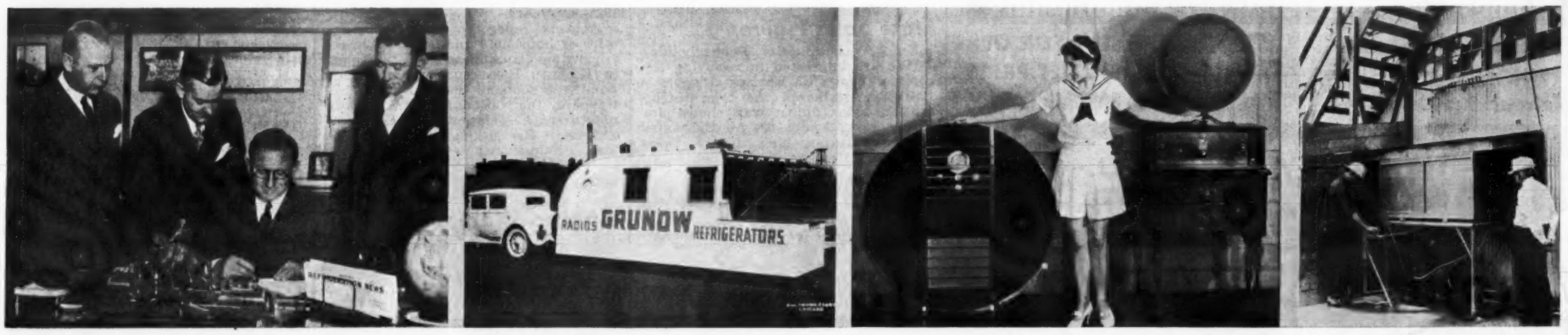
Plans for an Early Start in 1936 Get Underway in Frigidaire & Crosley Offices

Down at Crosley Radio Corp. headquarters in Cincinnati, interest this fall centers around two things—the new line of radios, and the large ice cube capacity "Super Freezer" that the company recently brought out. (1) H. E. Richardson, assistant to President Powel Crosley, reads the "Profits Through Glamour" editorial in the Sept. 25 News. (2) On page 1 of the same issue, Mr. Richardson notes, with approval, a story on the "Super Freezer." (3) Neil Bauer, field sales manager, memos a sales-helping suggestion to an Ohio distributor. (4) A. G. Lindsay, manager of the foreign division, just back from a visit to the Mediterranean territory, where he got the low-down on the Italo-Ethiopian situation.



(1) Glenn Corbett, Crosley advertising manager, and Vice President Lewis Crosley in an informal discussion of sales and advertising policies. (2) Field Sales Manager Neil Bauer checks a distributor's report. (3) Some of Crosley's 1936 promotion and advertising ideas will probably result from this conference, at which Messrs. Corbett and Crosley are leaders. (4) "Let me show you . . ." and Mr. Bauer tell a New York customer how other distributors are getting their share of all-year business with the Crosley line. He proves it with sales figures.



(1) Robert L. Simon, president of Metropolitan Electrical Distributors, signs a Gibson distributor franchise for the New York City area. Left to right in the picture are: Adam Loecher, general sales manager, refrigeration division; Frank S. Gibson, Jr., New York representative of Gibson Electric Refrigerator Corp.; Mr. Simon; and R. T. McDonald, manager of the supply department. (2) This unique trailer display car is helping Harry Alter Co. sign up Grunow radio and refrigerator dealers in the Chicago area. (3) Ten years difference in Sparton radio design. At right, the pride of 1925; and left, the 1935 all-glass cabinet, designed by Walter Dorwin Teague. (4) Workers at Hoover Dam quench their thirst at Frigidaire water coolers, sold by C. E. Pembroke.

(1) Lee Clark, Frigidaire advertising manager, conferring with representatives of Lord and Thomas, Frigidaire's new advertising agency. Behind him L. E. Kimball, general sales manager for Frigidaire Corp. of New England, looks through some tentative campaign material. (2) Jim Irwin, Frigidaire publicity director, has his 1936 plans all mapped out. (3) Mr. Kimball and Mr. Clark finish details for an eastern states sales drive. (4) Mr. Clark OK's it.

(1) This is the real Frank Pierce, household refrigeration sales manager for Frigidaire Corp.—no matter how much this snapshot may seem unlike previous pictures identified with Mr. Pierce in the News. (2) Mr. Pierce crushes out a cigarette with the same finality that he would make a decision involving a territorial sales operation. (3) O. E. Wolf, promotion and educational manager, commercial and air-conditioning divisions, says that Frigidaire's education program is proving out. (4) "It will bring us air-conditioning business in 1936."

THE NEWSPAPER OF THE INDUSTRY

ELECTRIC REFRIGERATION NEWS

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Evans & Harlan Reelected Nema Section Heads

Commercial Sections Will Pass on New Standards At Next Meeting

CHICAGO—Thomas Evans was reelected chairman of the Refrigeration Division of the National Electrical Manufacturers Association at the annual meeting of that body in the Palmer House here last week. Mr. Evans, who is president of Merchant & Evans, Philadelphia, was also reelected chairman of the Household Section of the Refrigeration Division of Nema.

J. A. Harlan, manager of Kelvinator's commercial refrigeration department, was reelected chairman of the Commercial Refrigeration Section of the Refrigeration Division.

In addition to Mr. Evans, the following executives were elected to the Advisory Committee: George Mason, president of Kelvinator Corp.; Howard Blood, president of Norge Corp.; Powel Crosley, Jr., president of Cros-

(Concluded on Page 2, Column 3)

Convention to Study Servicing Problems

DETROIT—Practical problems of the refrigeration and air-conditioning service business, ranging from the installation of truck refrigerating systems to the establishment of uniform accounting and bookkeeping methods, will be studied by members of the Refrigeration Service Engineers Society during their second annual convention, Oct. 23 to 25, at Fort Shelby hotel here.

Program for the three-day meeting was announced last week by J. H. Downs, president of the organization's Detroit chapter, which will be host to the convention.

Sessions will occupy the morning hours of each of the three days, with business getting under way at 9 a. m. Afternoons will be devoted to trips to Detroit manufacturing plants, including Kelvinator Corp., Wolverine Tube Co., and Detroit Lubricator Co. Wives of delegates to the convention will be given sightseeing trips to Greenfield Village, the Art Institute, the Detroit Zoo, Shrine of the Little Flower, and a bridge and tea.

Speakers during the sessions will include Herbert Herkimer, of New York City; H. P. Scher, Harry Burman, Kold-Hold Mfg. Co.; H. V. Higley, Ansul Chemical Co.; Frank Riley, American Injector Co., and T. H. Mabley, Air Conditioning Corp., Detroit General Electric air-conditioning distributor.

Twenty-five refrigeration and air conditioning manufacturing and educational organizations will have exhibits at the convention.

Detailed meeting and entertainment program for the convention is as follows:

Wednesday, Oct. 23:

9 a. m.—Registration. Call to order by President J. H. Downs of Detroit Chapter and address of welcome.

9:30 a. m.—Introduction of National Officers. Address—J. F. Nickerson, publisher of *Ice and Refrigeration* and

(Concluded on Page 2, Column 1)

Committee Changes Plan for Entertainment of Refrigeration Supply Jobbers in Detroit, October 23

All-Afternoon 'Open House' at the Home of the News to Be Followed by Buffet Supper and 'Exhibitors Frolic'

DETROIT—Instead of a dinner at the Hotel Wardell, as originally announced by the Detroit committee in charge of entertainment for refrigeration supply jobbers and manufacturing representatives who will be visiting this city next week, plans have been revised as follows:

ELECTRIC REFRIGERATION NEWS will hold "open house" all Wednesday afternoon, Oct. 23, 1935, where the refrigeration supply jobbers and manufacturing representatives will hold informal conferences on problems of mutual interest. At 6 o'clock a buffet supper will be served at the home of the NEWS, after which the group will adjourn to the Hotel Fort Shelby to attend the "Exhibitors' Frolic" to be staged by the Refrigeration Service Engineers' Society.

The original plan called for a dinner to be followed by an all-evening smoker in the NEWS building but after the invitations were issued it was found that there would be a conflict with the program of the Society which will hold its second annual meeting in Detroit on Oct. 23, 24, and 25. The above-mentioned change in the program was worked out after consultation with H. B. McDermott, secretary of the Refrigeration Service Engineers' Society, who has charge of the three-day meeting at the Hotel Fort Shelby.

The Detroit committee consists of J. D. Colyer, Wolverine Tube Co. (chairman); Irving J. Knudson, Detroit Lubricator Co.; Morill Dunn, McCord Radiator & Mfg. Co.; Frank B. Riley, American Injector Co.; and F. M. Cockrell, ELECTRIC REFRIGERATION NEWS.

The meeting of refrigeration supply jobbers sponsored by the Detroit committee has been under consideration since last summer and is the result of frequent suggestions that something should be done to straighten out the tangled conditions which have developed in the replacement parts and supply branch of the industry.

During the past year or two the number of jobbers handling replacement parts and supplies has been growing very rapidly and the manufacturers have been confronted with a difficult problem of determining just which concerns are actually performing the functions of a jobber and therefore entitled to a preferential discount.

In many cities the situation is complicated by the fact that manufacturers granted exclusive agencies to representatives or jobbers only a short time ago when there were very few outlets available for the distribution of merchandise to independent service companies. Now that there are from two to ten jobbers in many of the larger cities all wanting to buy direct from the manufacturer, there has been a growing demand that some sort of a standard be set up as a basis for determining recognition.

Several of the larger manufacturers of complete electric refrigerators have refused to sell replacement parts to either jobbers or independent service companies since they had their own distributors and dealers with exclusive franchises in each territory. With the tremendous number of electric refrigerators in use in homes and apartments, several million of which are now out of the manufacturer's guarantee period, independent service men have developed a lucrative business, thereby creating a strong pressure for sources of supply for replacement parts.

To meet this demand, a number of independent concerns have designed parts to suit the popular makes, and jobbers have entered the field to provide stocks for local distribution.

There are now 100 or more companies doing a jobbing business, some of which are also functioning as manufacturers, manufacturers' agents, or as independent service companies. Up to the present time there has been no association to serve the interests of this group.

Organization of Service Men

Several efforts were made to organize the independent service men before a permanent set-up could be effected. Several years ago, Milton Boneberg of Buffalo, N. Y., started a local organization and attempted to develop a national society, but was unable to carry out the plan in the face of depression conditions.

Later Herbert Herkimer of the Herkimer Institute of New York started a movement in which his school and its graduates had the leading role.

The headquarters of this organization were later transferred to Chicago and put under the supervision of J. F. Nickerson, well-known publisher in the ice and cold-storage field and widely recognized as a leader of association activities.

Under Mr. Nickerson's sponsorship, the Refrigeration Service Engineers' Society has made substantial progress and now has several hundred members with chapters in half a dozen of the larger cities.

Barber to Direct Sale of Montgomery-Ward Refrigerators

CHICAGO—Howard B. Barber, formerly district manager for Kelvinator Corp. in New York, will succeed Vance C. Woodcox as manager of the refrigerator division of Montgomery Ward & Co.

Mr. Woodcox resigned to join the staff of Geyer, Cornell & Newell, advertising agency which is handling the Kelvinator account.

Mr. Barber had been associated with Kelvinator Corp. for nine years, and before taking the position as manager of the New York district, was manager of Kelvinator's Detroit branch.

Automatic Products Adds To Floor Space

MILWAUKEE—Automatic Products Co. here, manufacturer of refrigeration and air-conditioning automatic control equipment, has added 5,000 sq. ft. of floor space to its manufacturing plant, reports R. W. Johnson, president.

This is in addition to the 3,500 sq. ft. added last spring to increase space for the general offices and engineering department.

ACMA Adopts Air Conditioning Tests And Standards

CHICAGO—The Air Conditioning Manufacturers Association at its meeting here last week formally adopted standards for the rating and testing of air-conditioning equipment.

These standards, state association officials, are the result of many weeks of investigation and study by leading air-conditioning engineers, representing not only the manufacturers, but also the American Society of Refrigerating Engineers and the American Society of Heating and Ventilating Engineers.

ACMA members believe that much of the uncertainty which has confronted buyers of air-conditioning equipment will be removed by this action, and that buyers can determine the value they are getting when they contract for an air-conditioning installation.

In drawing up the standards, consideration was given by the manufacturers to informing the public as to what true air conditioning is, what an air-conditioning system should do, and approximately what air conditioning should cost on the basis of results to be obtained.

Officials of the association believe that the adoption of these standards should go far toward maintaining the high plane of industry practices.

Howatt Urges Selling of Air Conditioners on Satisfaction

By T. T. Quinn

DETROIT—Engineers who are connected with the fields of heating, ventilating, and refrigeration can expect to play an increasingly important part in America's home life in the future, John Howatt, national president of the American Society of Heating and Ventilating Engineers, told Detroit A.S.H.V.E. members at their meeting last week in the Wardell hotel here.

"Air conditioning has taken the popular fancy more than any other single development within the past 10 years," Mr. Howatt said. "As far as the public in general is concerned, it has come from nowhere—a 'depression baby,' some call it. It has gone forward when everything else was standing still.

"We know, but the public doesn't, that 30 years of pioneering work preceded the introduction of air conditioning to the general market. We know that it has been an important part of many industrial processes for many years.

"Air conditioning has been a boon and a life saver to many people, in many places. It has helped, perhaps most of all, utility companies and

(Concluded on Page 4, Column 1)

RMA Approves Standard Tests For Equipment

Association Adopts New Standards for Commercial Condensing Units

CHICAGO—Standard methods for testing mechanical condensing units were adopted by the Refrigerating Machinery Association at its annual fall meeting last Friday, Oct. 11, in the Palmer House hotel here.

These standards were proposed after many months of study and research by a joint committee of manufacturers' representatives and the American Society of Refrigerating Engineers.

With the adoption of these standards, RMA members believe, a purchaser of refrigerating equipment will be able to determine exactly how much refrigeration he is getting for his money. It is planned that manufacturers will test and rate their equipment according to these approved standards, and certify ratings of their machines to a central bureau.

Officers and the executive committee of the association were reelected.

RMA members last week approved a proposal to split its standards committee into six general groups.

Division of standardization problems into several related groups will permit each committee member to give detailed attention to the problems of one of them.

Thornton Lewis of Carrier Engineering Corp. is chairman of the first group, which is studying low pressure refrigeration units, of 20 hp. and smaller, using Freon, methyl chloride, sulphur dioxide, etc.

S. E. Lauer, York Ice Machinery Corp., has charge of the second group, studying other types of refrigeration compressors of all sizes, enclosed and open type, vertical and horizontal.

G. A. Heuser, Henry Vogt Machine Co., heads the group studying shell and tube, double pipe, surface type refrigerant condensers, liquid coolers, and heat exchangers.

Fred T. Goes, The Vilter Mfg. Co., has charge of the group concerning

(Concluded on Page 2, Column 4)

Gift of Ice Cubes by Distributor Results In Sale of Unit

BAY CITY, Mich.—How little things often will clinch a sale was demonstrated here recently, when a supply of ice cubes acted as salesman for George F. Dent, Kelvinator distributor for the Bay City territory.

Mr. and Mrs. Dent were having a soda one evening in a neighborhood drug store, when in rushed a prominent physician and his wife, almost in hysterics. Their refrigerator, it seems, had gone "haywire" . . . not an ice cube in the house . . . company coming unexpectedly . . . what to do? Not even waiting for an answer, they rushed right out again.

The Dents went home, called a messenger and dispatched all of their ice cube trays (filled with ice) to the physician's house with a note, reading, "Compliments of the Dent Kelvinator Sales."

The next morning the physician came into the store and purchased a Kelvinator.

Nema Executives Confer in Chicago on Program for Common Welfare of the Industry

The corridors were full of refrigeration executives at the Nema fall meeting in the Palmer House last week. (1) W. Paul Jones of Fairbanks-Morse gets an optimistic outlook on 1936's merchandising possibilities from P. B. Zimmerman of General Electric Co. (2) Mr. Jones gets a tale of equal optimism from John W. Ditzell of Stewart-Warner Corp. (3) This "era of good feeling" seems to be contagious. Here are Charles Gibson of Gibson Electric Refrigerator Co. and C. R. D'Olive of Stewart-Warner. (4) A. E. Allen and R. E. Imhoff, Westinghouse men, get together.

Practical Problems of Refrigeration Service Men to Be Studied

(Concluded from Page 1, Column 1)

Refrigeration Service Engineer magazines, Chicago.

9:45 a. m.—Address of National President T. J. Fowler.

10 a. m.—Appointment of Committees and Announcements.

10:15 a. m.—Report of National Secretary H. T. McDermott. Report of National Treasurer E. J. Merenda.

10:30 a. m.—Progress made in Educational Program and Looking Forward to 1936—By George H. Clark.

11 a. m.—Herbert Herkimer—On the Adoption of Uniform Symbols. Report of Committee on Uniform Cost Accounting System. The Advantages of a Universal Credit System for the Service Field—By H. P. Scher. Adjournment.

Afternoon: Visit to Kelvinator plant and ladies' trip to Greenfield Village.

Evening: Exhibitors' Frolic.

Thursday, Oct. 24:

9 a. m.—Call to Order. Question Box.

9:30 a. m.—Truck Refrigeration—by Harry Burman, Kold-Hold Mfg. Co.

10:30 a. m.—Toxicity—by H. V. Higley, Ansul Chemical Co.

11:30 a. m.—Herman Goldberg, Standard Refrigeration Parts Co., Chicago.

12 m.—Talk on Air Conditioning, T. H. Mabley, Air Conditioning Corp., Detroit. Two 10-minute talks by manufacturers. Report of Nominating Committee and Election of officers.

Afternoon: Visit to Wolverine Tube Co., and ladies' trip to Art Institute, the Detroit Zoo, and Shrine of the Little Flower.

Evening: Annual Banquet.

Friday, Oct. 25:

9 a. m.—Call to order and question box.

9:30 a. m.—Talk by Frank Riley, American Injector Co.

10:30 a. m.—What is expected of the Independent Service Man. How to Conduct a Service Organization from a Financial Standpoint—by E. A. Seibert. General Discussion by members. Invitations for next Convention City.

11:30 a. m.—Reports of Convention Committees. Unfinished Business.

Afternoon: Visit to Detroit Lubricator Co. or other manufacturing plants. Ladies' bridge and tea at General Electric Co.

Evening: Entertainment by Detroit Chapter.

Exhibitors who will have display booths at the convention include:

Refrigeration and Air Conditioning Institute, Chicago; Electrimatic Corp., Chicago; Rotary Seal Co., Chicago; Utilities Engineering Institute, Chicago; Automatic Products Co., Milwaukee; Geo. Monjian Co., Chicago; Standard Refrigeration Parts Co., Chicago; American Injector Co., Detroit; Wolverine Tube Co., Detroit; The Starr Co., Richmond, Ind.

Fedders Mfg. Co., Buffalo, N. Y.; Detroit Lubricator Co., Detroit; Virginia Smelting Co., Boston; Alco Valve Co., St. Louis; Automatic Reclosing Circuit Breaker Co., Columbus, Ohio; Kerotest Mfg. Co., Pittsburgh; Ansul Chemical Co., Marinette, Wis.; Henry Valve Co., Chicago.

Copeland Refrigeration Co., Detroit; McCord Radiator & Mfg. Co., Detroit; Imperial Brass Co., Chicago; Minneapolis-Honeywell Regulator Co., Minneapolis; Dole Refrigerating Co., Chicago; Frigidaire Sales Corp., Dayton; Trico Compressor Service, Chicago.

Commercial Section of Nema Will Consider Standard Tests

(Concluded from Page 1, Column 1)

ley Radio Corp.; and W. F. Armstrong, vice president and assistant general manager of Frigidaire Corp.

It was reported at the meeting of the Commercial Refrigeration Section that the committee which has been laboring over a period of months on standard ratings for commercial condensing units has nearly completed its work, and should have its rating standards ready for approval at the next meeting.

The Commercial Section also decided to appoint a committee to meet with a similar committee from the Refrigerating Machinery Association and evolve specifications for standard equipment to be furnished with condensing units.

Still another committee of the Commercial Refrigeration Section will shortly begin working out water cooling consumption standards; i. e., the amount of water a given number of people will drink during a specified time under certain conditions.

EARNINGS

Sparks-Withington Co.

JACKSON, Mich.—Sparks-Withington Co., manufacturer of Sparton refrigerators and radios, for the fiscal year ended June 30 reports a net loss of $167,738, compared with a loss of $344,381 for the preceding year. Net sales were $5,411,046 against $4,850,830 for last year.

Sales Contests & How to Run Them

NO. 11—CONTEST BUILT AROUND DEATH OF 'ALIBI IKE' BOOSTS SALES ABOVE $300,000 MARK IN 5 WEEKS

By John Kumler, Sales Contest Manager Buckley, Dement & Co., Chicago

G. C. Powell, sales manager of B. H. Laudermilk Realty Co., tells us of an interesting "Alibi Ike" contest that brought $300,000 in business.

He divided the sales into units of $500 and awarded points on a basis of a point for every $2 in sales. Points were redeemable in merchandise prizes, of which a large selection was offered. The circular showing these prizes were sent to the family of each contestant and the prizes were priced in points costing Laudermilk 1 cent each.

A casket-shaped box was secured and placed on a stand and draped with black cloth. About it he had a placard reading:

"Here Lies Alibi Ike, the imp who has been standing between you and success. We have laid him low and will bury him deep."

The casket was kept decorated with flowers and for each $500 worth of business, a nail was driven into the casket to which was attached a tag bearing the name of the salesman who made the sale. They drove 600 nails in five weeks.

At the conclusion of the contest services were held for Alibi Ike at a regular evening meeting. Some of the sales managers were outfitted like undertakers—in fact, extremely so. One of them, dressed as a clergyman, read the services from a 'phone book. At the end of the services the coffin was carried out, preceded by a manager with a Chinese tong-tong.

Messages were sent to the sales force during the contest, the final one being an announcement of his demise. This had a black border with the following message:

"Don't let this border make you sad. It's only mourning for Alibi Ike and it's to make you think. Alibi Ike is the imp who often stands between you and the cashier. Knock him cold! You can't pay the butcher with an alibi. The grocer doesn't want it and you can't cash it at the bank. When old Alibi Ike climbs on your shoulder and whispers into your ear, 'Take your time,' or 'It's too hot now,' or 'Wait until tomorrow,' just remember that he is trying to take money out of your pocket and rob you of success."

RMA Splits Up Work On Standards for Tests

(Concluded from Page 1, Column 5)

itself with cooling and condensing apparatus of pipe coil or extended surface types, condensers of the evaporative or dry surface type.

W. H. Aubrey, Frick Co., Inc., heads the group studying water ice making systems and apparatus, which includes all machinery not classified under the preceding groups.

A. H. Baer, Carbondale Machine Corp., has charge of the study of contract conditions and payments, including erection. This will cover erection standardization, outside purchases standardization, terms of payment, and specifications and contract forms.

S. L. Nicholson, vice president of National Electrical Manufacturers Association and assistant vice president of Westinghouse Electric & Mfg. Co., was guest speaker at the organization's noon luncheon meeting and emphasized the good which a trade association can render its industry by improving production methods and widening markets.

Robert M. Gaylord, president of the Ingersoll Milling Machine Co., Rockford, Ill., and a member of the executive committee of Machinery & Allied Products Institute, spoke on MAPI's activities and future program at the afternoon session. At this meeting, a report on air-conditioning standardization in Chicago was presented by E. T. Murphy, a member of the Chicago RMA section, and a vice president of Carrier Engineering Corp.

President D. Norris Benedict presided at the sessions.

Interesting paper presented at the meeting was a composite report of payment on contract sales from Oct. 1, 1934, to Aug. 31, 1935, based on the individual reports from nine member companies whose sales represented 85 per cent of the total sales reported over the period.

Two policies for the guidance of association members in regard to national conventions and exhibitions, and in national convention exhibits embodying refrigerating equipment, were suggested at the meeting.

It was recommended that members exhibit refrigerating machinery assembled or manufactured by them only in convention or exhibitions approved by the executive committee. At the present time, such approved conventions include those of National Restaurant Association, National Association of Ice Industries, National Hotel Exposition, Chemical Show, International Heating and Ventilating Exposition, Dairy Industries Exposition, and Power Show.

It was also recommended that members supplying refrigerating equipment in connection with conventions or exhibitions, the purposes of which are extraneous to the refrigerating machinery industry, should supply such equipment on the basis of the regular selling price, less a credit for such of it as may be salvageable when removed and returned, after the convention is over.

Maximum credit should be 60 per cent of the regular selling price of the salvageable equipment, not including expense of installation, operation, service, removal, or transportation. This limitation, of course, would not apply if the association member were a joint exhibitor of the equipment.

Officers of the organization, who were reelected for another year, include: D. Norris Benedict, president; J. M. Fernald, vice president; William B. Henderson, executive vice president; S. B. McNaught, general counsel.

348,459 Ice Boxes Are Sold in Past Year

CHICAGO—Sales of ice refrigerators for the fiscal year ended July 31 totaled 348,459 units, an increase of 25.3 per cent in number and 44 per cent in dollar volume over last year, according to reports made to E. G. Vail, secretary of the National Refrigerator Manufacturers Association.

Increase in dollar volume, Mr. Vail says, is due to better styling and improved methods of construction, in response to public demand for better built ice refrigerators. Both manufacturers' and dealers' stocks of merchandise are reported to be low.

Sales of units by members of the association for the past three years are: 1932-33, 243,763; 1933-34, 276,159; 1934-35, 348,459.

New York Ice Box Sales Up

NEW YORK CITY—A slight increase in ice refrigerator sales for the first seven months of 1935 is reported to the Central New York Ice Association by 11 member companies. These organizations report sales of 1,395 units, compared with 1,345 units during the same period last year.

Vacuum Cleaner Sales

CLEVELAND — Vacuum cleaner sales, as reported for the industry for the month of August, 1935, totaled 65,128 floor cleaners and 16,227 hand cleaners.

Dividend Declared by Stewart-Warner

CHICAGO—Directors of the Stewart-Warner Corp. last week declared a semi-annual regular dividend of 25 cents a share on the common stock payable Dec. 2 to stockholders of record Nov. 1. An extra dividend of 25 cents a share payable on the same date was also declared.

Commenting on the dividend declaration, James S. Knowlson, chairman of the board, stated that while earnings figure for September were not yet available indications were that the nine months net income should approximate $1 a share.

"The board of directors feels," Mr. Knowlson stated, "that a 50 cent regular dividend basis is conservative and well justified by our current earnings rate."

The current dividend declaration is the first by the Stewart-Warner Corp. since November, 1930.

Mrs. Roosevelt's Private Kitchen Is Made All-Electric

WASHINGTON, D. C.—When Mrs. Roosevelt tires of state dinners or meals prepared by professional chefs, she can cook in her new private all-electric kitchen, recently installed on the third floor of the White House.

Designs for the kitchen were drawn up by the General Electric Institute, Nela Park, Cleveland. Architects visited the White House to plan this kitchen, and to plan the alteration to the main kitchen on the ground floor, where heavy-duty electric ranges, sufficient to prepare state dinners for 125, have been installed.

Mrs. Roosevelt's kitchen is equipped with an electric range, dishwasher, refrigerator. Besides these, a small, built-in radio, electric call bell system, electric clock, telephone, and electric fan, are installed.

The kitchen planning desk gives an unusual touch to the room, because when the desk chair is folded and not in use, the desk has the appearance of a cabinet. Modern lighting adds brightness, as does the huge round window, reaching from ceiling to floor, which serves as a combination window and sky-light.

Color-scheme of the kitchen is blue, with woodwork of light blue, and a harmonizing color in floor covering.

Home Economist of Georgia Power Believes in Using Appliances at Home

ATLANTA—Mr. and Mrs. H. A. Smeeton of the Georgia Power Co. have put preaching into practice with their all-electric home at Mountain Manor Lake, about eight miles from this city. Mr. Smeeton is dealer representative and his wife is Fern Snider Smeeton, nationally known as home service director for the utility.

Electric appliances in the Smeeton home include: refrigerator, range, water pump, water heater, dishwasher, cigarette lighter, ironing machine, washer, iron, two radios, three clocks, nine portable lamps, mixer, waffle iron, grill, toaster, coffee maker, and percolator.

G-E 'Magic Kitchen' Shown In Minneapolis Exhibit

MINNEAPOLIS, Minn.—The General Electric "Magic Kitchen" was on display at the first annual home appliance show held at Boutell's department store here, a show which attracted a total attendance of 60,000.

Local color was given the General Electric exhibit by the fact that Miss Edwina Nolan, home service director of General Electric Company's specialty appliance department, Cleveland, was one of the hostesses. She is the daughter of former Congressman W. I. Nolan of this city.

The G-E "Talking Kitchen" also was a feature of the show.

Four Crosley Distributors' Representatives at Plant

CINCINNATI—Four men from Crosley distributing outlets located in three cities of the United States were visitors at the Crosley factory here recently. They were: J. E. Johnson, president, Cooper-Louisville Co., Louisville, Ky., W. E. Titus, president W. E. Titus Radio Corp, Oklahoma City, Okla, R. R. Townes, and A. F. Biles, of the appliance department, Castner Knott Co., Nashville, Tenn.

Aitken Appoints Crosley Dealer in Detroit

DETROIT—The Monarch Home Appliance Co., 7421 Michigan Ave., here has been appointed dealer for Crosley radios and Shelvador electric refrigerators, by the Aitken Radio Corp., Crosley distributor here.

AIR CONDITIONING

Satisfaction—Not Profits—Should Be Sold by Air-Conditioning Salesmen, Howatt Says

(*Concluded from Page 1, Column 2*)

contractors. It filled the gap in utilities' power lines, and in contractors' building and construction work."

Many optimistic people are of the opinion that air conditioning, as an industry, will show us the way out of our present economic doldrums, but Mr. Howatt is not of this school. It will be a help, he thinks—in itself, and in the stimulating effect that its rise will have on other durable goods industries.

Building and construction trades are the ones which now show signs of awakened activity, the speaker said. And while there will be little large building construction in this country during the next two or three years, there will be a great increase in the construction of small home units.

Modernization movements, carried on the past few months, have increased considerably the volume of home industry, the speaker said.

In any program of modernization, he added, air conditioning will play an important part. It is this field in which air conditioning is comparatively new, and in which it has attracted the most attention, although it has been used in industrial processing work for several years.

Air conditioning for human comfort and for health, he said, will become increasingly necessary and important as time goes on. Air conditioning as a health factor will outdistance its value as a comfort factor in the future, he predicted. Also, people will begin to accept air conditioning for the good it does them, and not for the profit possibilities which it opens to them.

"Most air conditioning today," said Mr. Howatt, "is sold on a profit basis—that is, the merchant or business man installs it because he is convinced it will increase his revenues, enable him to make more money. This is not always true.

"For instance, the Pullman Co., one of the large users of air-conditioning equipment, has declared decreased dividends this year—and this falling off in profits may be largely attributed to air-conditioning equipment. Net earnings were not as high as in the past, because air conditioning had increased costs more than the resultant profits.

"The profit motive, in most present installations, was the determining factor in the sale—higher even than the health and comfort factor. If business men are led to think that air conditioning will show the magic way to more money, and if, as is often the case, profits are not increased, the merchant will feel that he has been taken advantage of.

"Satisfaction, and not profits, should be sold. This element of satisfaction is of far greater importance than the number of installations made. Most important of all at present is that the installation be properly planned and designed by competent engineers to fit the needs of the business to which it is adapted."

Ownership of property brings security; air conditioning brings health and comfort. Together the three bring happiness, Mr. Howatt said.

"Air conditioning makes the home more liveable. It provides inside control of temperature, regardless of outside weather conditions. With air conditioning, we will no longer have to leave our homes in summer, to escape the heat—we'll have year-around comfort, and home will be a place to live in all the year, not just part of it."

In planning for air conditioning as a daily necessity, more attention must be paid to the materials which go into the building of homes, the speaker stated. Proper insulation, to provide more resistance to heat and cold passage, must be considered. No longer, he said, will there be any excuse for air leakage in buildings.

Of the influence of comfort cooling on the building and construction plans of the future, Mr. Howatt said:

"The public demand, noted in the past, for comfort in public buildings (stores, offices, theaters, etc.) will soon spread to all types of buildings, homes included. The realtor who builds a home without air conditioning equipment will have to find his market in the lower price classes—for the higher price classes will demand year-around air conditioning.

"The home of the future will either have to be built with an air-conditioning system as an integral part of it, or else constructed so that such a system can easily be installed."

Homes today cost less to build, but are made of better materials, than those of 10 years ago, Mr. Howatt said. Modern homes are constructed for utility, convenience, and comfort, he added, not for display. Man today wants a home to live in, all the year—not just for protection against the elements.

The idea of prefabrication, as applied to homes, is not a new one, said the speaker, but it is making its swiftest strides forward in the United States today. Sears, Roebuck & Co., he said, is carrying on an extensive program, with complete prefabricated homes, air conditioning, heating and all, provided for from $3,000 to $4,000.

"One of the things which we may safely expect," he said, "is a readjustment which we engineers will have to make toward building trades in the future. We must learn to adjust ourselves to seeing more and more work done in the factory, and less and less in the field.

"The home of the future may be built, in its entirety, in the factory—and the actual work in the field may become, in time, little more than an assembly job."

Last week's meeting was the first to be presided over by the Detroit chapter's new officers, elected last May. These officers are:

President, A. C. Wallich, Universal Cooler Corp; vice president, R. K. Milward, U. S. Radiator Co.; treasurer, Frank J. Feely, Taylor Supply Co.; secretary, W. F. Arnoldy, Minneapolis-Honeywell Co.

On the board of directors are Edward Glanz, of Glanz and Killian Co.; G. D. Winans, Detroit Edison Co.; R. F. Connell, U. S. Radiator Co., and A. P. Darlington, American Blower.

Lithographer Obtains Better Results by Humidity Control

PHILADELPHIA—Better results in plate making and offset work and more efficient handling of inks and printers' rollers has been made possible through accurate control of humidity by means of a York air-conditioning system recently installed in the plant of the Ketterlinus Lithographic Mfg. Co. here, reports J. L. Farrell, superintendent of the plant.

"Plate making," states Mr. Farrell, "is one of the most important operations in lithographic printing. A glue solution is used in this process, and if the humidity in the plate making room is too high, this glue solution becomes too soft, causing the proper production of plates to be difficult.

"On the other hand, with definite control and regulation of humidity in our plate making room, we can obtain uniformly good results because we can keep the humidity constant at say 50 per cent, regardless of daily variations in conditions outdoors.

"In our offset press rooms on the third and fourth floors of our plant," he continued, "we find that air conditioning gives us another advantage. Before the air-conditioning system was installed, one of our main troubles there was in the shrinkage or stretching of paper, due to changes in weather conditions.

"Here again, humidity plays the important role in getting good results. High humidity causes paper to stretch. In offset printing for lithographic work we print one color at a time, or two colors at one run if a two-color press is used," he declared.

Air conditioning also helps in the press rooms in overcoming trouble with printers' rollers and inking materials, Mr. Farrell said. In warm or damp weather, rollers may get soft, but with temperature and humidity control, the ink rollers work evenly and production is speeded up.

In printing by the offset process, water is used to keep the plates from getting too dry. If the plate dries too rapidly, more water must be added by means of what are technically known as "fountains." On a dry day, fountains may have to be kept wide open to keep a sufficient supply of water on each plate.

Conditions of weather and temperature might change overnight, and if the pressman should forget to set his fountain back, he might spoil a job, Mr. Farrell pointed out. With air conditioning, he said, fountains may be set at a certain point and results will be relatively the same each day.

"Humidity control," Mr. Farrell concluded, "is the thing in which we are chiefly interested from the standpoint of operation. Temperature control has definite advantages too, in improving the personal comfort of our workers. In the air-conditioned rooms the men do not perspire so freely and paper can be handled more easily, without soiling. So air conditioning in our plant has resulted in improvement in our processes and in general efficiency and comfort of our employees."

Air-conditioning equipment serves approximately two-thirds of the third floor, the entire fourth floor, where the pressrooms are located, and the plate making room on the sixth floor.

Equipment for the third and fourth floors consists of one 8x8-in. Y-34 York compressor; one 23 in. x 16 ft. shell and tube type condenser; one 28 in. x 16 ft. shell and tube water cooler, a washer type humidifier.

The shell and tube water cooler supplies chilled water to the dehumidifier, which cleans and conditions air returned from the conditioned areas. This conditioned air is then circulated through ducts at the rate of 31,600 cu. ft. per minute and distributed to the conditioned areas. In the return air ducts, is installed automatic control equipment which regulates the operation of the system, which is rated at 80 tons of refrigeration per day.

Water used for condensing the refrigerant is circulated through the shell and tube condenser and then to an indoor type cooling tower, where it is finely sprayed in the path of an air stream, 36,000 cu. ft. of air per minute where the heat is transferred to the outside air. This arrangement makes it possible to use the condensing water over and over again.

Cleveland Electrical League Launches Winter Air-Conditioning Promotion

CLEVELAND—With the sale of 1,000 winter air-conditioning systems as its goal, the Home Air Conditioning Division of the Electrical League of Cleveland has begun an intensive fall promotional campaign among owners of new homes and the city's 177,000 old ones now using warm air furnaces.

Staff members of the division will work directly with architects, building contractors, air-conditioning equipment dealers, home owners, manufacturers of air-conditioning equipment, and residence wiring contractors.

Architects will be informed of the advantages of air conditioning, in order that plans for air-conditioning equipment can be included in original plans for new homes.

Services to be rendered to building contractors in the sale of air-conditioned homes include: (1) preparing and placing a series of four 25-line classified advertisements, one to run each Sunday for four consecutive Sundays, in the *Cleveland Plain Dealer*; (2) floodlighting a portion of the exterior of the house for 30-day public inspection; (3) supplying "for sale" and "air conditioned for health and comfort" signs on the property; (4) paying for liability insurance on property during 30-day inspection period.

To aid air-conditioning equipment dealers, division members will assist in contacting prospective home owners or building contractors, aid in the preparation and mailing of sales promotion material, and assist on sales problems.

Home owners who are building or thinking of building will be educated to the advantages of air conditioning, acquainted with various makes and models of equipment, and supplied manufacturers' literature as requested.

Services to manufacturers of air-conditioning equipment will include advising them equally of prospective work on new houses, housing projects, and apartment houses; assisting in placing literature in the hands of prospective buyers; and trying to secure for manufacturers publicity concerning unusual installations and general industry news.

Members of the home air-conditioning division of the league serve residence wiring contractors by advising them of work in prospect, and whereever possible recommending them to builders, owners, architects, and dealers; by assisting them in securing houses to be wired in accordance with Electrical League wiring specifications for "electrified home" display; and by preparing wiring layouts for them without charge on all "electrified home" jobs.

The new home air-conditioning division of the league will also maintain a lecture bureau, will hold meetings for all interested groups, and so on. One of the leaflets prepared by the division for general distribution to prospective purchasers emphasizes "Home-made Weather—air conditioned for health and comfort." In addition to these motives, the leaflet points out economy advantages such as fewer cleaning bills, less money for redecorating, lower fuel costs, and longer furniture life.

Gravity Process Used In Bed Conditioner

BUCHANAN, Mich.—Clark Equipment Co. here is manufacturing the Clarkair, an air-conditioned bed which is cooled by the gravity process, and which operates without a canopy, with bedroom windows and doors open.

Refrigerating apparatus, consisting of an electric motor, a compressor, a condensing coil, a fan, and other details, is contained in a small box, located on the floor at the foot of the bed.

The bed mattress is surrounded by a curtain, which hangs upon a light bar that is supported both at the head and foot of the bed. Supports for this bar consist of standards fastened into pedestals that rest on the floor.

A cooling coil, in which a low temperature is maintained while the apparatus is in operation, is placed over the foot of the bed, within the curtain surrounding the mattress. The enclosure surrounded by the curtain is entirely open at the top.

The Clarkair apparatus is readily applicable to any existing bed, its manufacturers claim. It is easily installed by plugging into an ordinary electric outlet within the bedroom.

When the cooling coil is operating, air, as it is cooled, passes down through this coil by gravity, and gradually displaces the warm air within the curtain surrounding the bed. This curtain, which entirely surrounds the mattress, is open at the top.

The warm air rises, and is dispelled above the curtain, being replaced by cooled and dried air falling, by gravity, through the coil. Heat given off by the sleeper's body, or from his lungs, is carried off in the same manner.

Interior of the bed is, in effect, a pool of cool air constantly being filled by the cooling coil. Approximately 65 cu. ft. of air per minute falls into the bed, displacing an equal amount of warm air. This warm air spills out over the edge of the pool, since warm air is lighter than cool air.

Despite the constant change of air, no draft is noticeable to occupants of the bed, the manufacturer asserts.

Temperature control of the air within the bed is both automatic and manual. The apparatus is so designed that the temperature within the bed is approximately 65° F., no matter what the outside temperature may be. Under these conditions, a blanket is necessary for sleeping comfort at all times.

If the incoming air contains a high percentage of moisture, as it generally does on a warm night, this moisture is condensed out of the air by the cooling coil, and the resulting water is caught in a receptacle provided for that purpose.

To get in or out of the bed, it is simply necessary to put one's hand on the bar which supports the curtain, and tip the bar by the proper amount. Then one may get in or out of the bed exactly the same as if there were no curtains about it.

In making the bed, the bar is pressed clear down to the mattress on both sides, after which the bed can be made as usual. If desired, the bedspread may be put over the bar in its lowered position.

Operating expense, manufacturers of the system say, is about the same as that of two electric light bulbs.

Norge Merchants Tell How to Improve Window Displays & Plan Traffic Pullers

PROPER window display has strong selling power. The smart dealer realizes that he pays a weekly salary for his window space just as he does for every salesman he employs. He should arrange his window displays so they will be as productive of sales as his personnel.

Windows should be changed frequently. The objective of window displays is to attract "lookers" into the store. Window display is the only form of advertising that makes use of the product itself.

Five essentials enter into an effective window display—arrangement and design, color scheme, lighting, motion, and decorative material.

Arrangement and Design. Cleanliness is the first requisite for an attractive window display. Second, too much display material must not be crowded into a window—such crowding gives a cluttered appearance and is too confusing to the casual "looker-inner."

Placing of various units of a display is important. If one unit is shown, it is frequently placed in the center, but is sometimes placed to right or left of the center, with a display card or cutout in the other half of the window to provide seeming balance.

Triangular Arrangement

Generally speaking, a triangular arrangement is advisable—that is, the broad masses should give the feeling of solidarity that triangular arrangements provide. When two or more units are to be displayed, an informal arrangement, which appears to be balanced without being too symmetrical, is preferred.

The center of the unit should never be above the eye level of the spectator, as very few people ever see anything above eye level when walking along the street.

It should be remembered that the left-hand window faced from the street is more productive of sales than the right-hand window. Objects in the right window are faced slightly toward the direction in which traffic is moving, while those in the left-hand windows face the on-coming traffic.

Simplicity is important in window display—people are too busy to spend much time in front of windows. Displays should tell brief messages which may be "read on the run" and yet might impel passersby into the store for further information.

Too many streamers pasted on the windows cheapen the store. Except in the case of a special campaign or similar event, these should not be used.

Color Scheme

Color Scheme. Colors may be divided into warm, active colors (red, orange, yellow) and cool, passive colors (green, blue, purple). To create an effective display warm colors may be used to attract attention, cool colors for backgrounds.

To obtain color harmony, complementary colors such as orange and blue, yellow and violet, etc., may be used but are apt to be a little too vivid. Harmony is also obtained through the use of one color in tints and shades, such as light and dark green, or pink, red, and maroon, etc. White, black and metallic colors are also effective.

Color suggests moods or seasons. The window decorator should take advantage of color symbolisms to enhance the window selling message.

Lighting. Plenty of light focused on the merchandise, rather than into the spectator's eyes, will draw crowds to the display window. Spotlights focused on the center of attention are very effective. Colored lighting should be used with care. It should be remembered that any display that depends on lighting effects will lose much of its value when seen in the daytime.

Motion. A moving object in a display window will attract attention rapidly. When motion is used care should be taken that the motion focuses attention on the point of principal interest.

Decorative Material. One individual should have the responsibility of installing the display, but ideas can be originated by employees. Prizes are given by some dealers to those providing the greatest traffic-stopping displays.

Background materials for window displays include crepe paper, corrugated packing board in attractive colors, and fabrics. Fabrics may be used over and over if they are lightfast.

Equipment should include sheets of wall paper, an assortment of light lumber, cardboard, show card colors, and other "tools of the trade." Reader cards should be prepared by a professional sign writer—a poorly lettered card may spoil the effect of the whole window.

Themes of window displays should tie up with all holidays throughout the year and with special local events.

If displays carry a real sales message toned to consumer's interest, a large percentage of "lookers" can be attracted into the store. The interior display should be located as near the front of the store as possible, so it is easy to find for those who, attracted by the window display, enter the store.

Editor's Note: Prepared under the direction of James A. Sterling, director of advertising and sales promotion for Norge Corp., and Gerald E. Stedman, vice president in charge of market planning for Cramer-Krasselt Co., the Norge Merchant Training Manual is a composite of information on successful merchandising practices gleaned from Norge dealers all over the country.

Utilizing lengthy questionnaires, Messrs. Sterling and Stedman drew out from the Norge field organization the best dealer selling and operating methods which have been evolved from their experiences in selling electric refrigerators during the last several years.

These gentlemen have granted ELECTRIC REFRIGERATION NEWS permission to extract and condense information contained in this manual—a job which has been completed by Frances McNamara of the editorial staff.

How to Get Floor Traffic

Successful merchants in present-day appliance retailing are constantly using new methods, planning new store promotions, and conceiving new traffic-pulling stunts that will stir up the neighborhood and get more people into his store than would ordinarily visit it.

They try various promotional ideas. Some go over, some have moderate success, and some fall flat. But something new every month or so will keep salesmen, employees, service and delivery men, and the neighborhood interested in the dealer's retail activity.

In modern retailing, new ideas are as essential as new merchandise. Many ideas can be provided by the company and its distributors, but the merchant can conceive other ideas better fitted to local conditions.

The merchant should not wait for trade to come to him—the greatest profit is found in the plus volume. Until his store has been so crowded that he cannot wait on his trade, the dealer has not reached his limit of service, patronage, volume, or profit.

Since investment and overhead are based on volume regularly attained, plus-volume that can be created by traffic-pulling stunts, create a wider margin of profit.

Traffic-Pulling Stunts

A few tested traffic-pulling stunts are related below:

Reviving Inactive Accounts Idea. The dealer sends advertising on regularly monthly account invoices to old customers who have not been in the store for some time. In the "credit column" monthly savings to be gained from use of a certain product may be listed. Against these figures, monthly terms of possessing the same product may be put in the "charge column" of the statement. The "balance column" may be used to list the net cost of possessing the model. In this way, the invoice indicates that the product is able to finance itself. A return card enclosed with the statement asking that a salesman be permitted to call may produce leads.

Savings Check Idea. A specimen check accompanying a sales letter, made out in the amount representing the average monthly saving to be gained from ownership of the product, can be used to illustrate dramatically the amount which the prospect is losing.

Tipsters Club Idea. The dealer may organize a "tipsters" club among satisfied users which will encourage them to turn in (either in person or by mail) names of acquaintances who may want to buy an electric appliance.

A "friendship" prize may be given a "tipster" whenever a sufficient number of such prospects has been closed. A point system may be used. For example, 10 points if she turns in a prospect's name; 20 points if she secures the prospect's promise to call at the store; 20 points if she arranges an appointment for an outside salesman to call; and 30 points if she personally conducts the prospect to the store.

Chicken-Day Idea. To attract rural trade, the small-town dealer may offer one or two cents per pound more for poultry than the market price on that day. To gain the added cent or two, farmers will visit the store. Poultry can be disposed of through regular trade channels.

Nine-Cent Sale Idea. Also appealing to the rural trade, is the "nine-cent sale" advertised by mail to rural routes, offering special bargains such as a galvanized pail.

Scattering Envelopes in the Street. The dealer can preserve all envelopes he gets through the mail during a period of three or four months, slit them carefully with a sharp knife to leave a smooth edge, insert circulars or handbills, and scatter the cancelled envelopes through the streets. Curiosity will prompt people to pick up such letters. Some will bring such letters back to the store unopened; others will open the envelopes and see the promotion material.

These are a few of the ideas that can be used to attract traffic to a dealer's store. When he has set up methods to attract greater store traffic, the dealer wants to push his sales force to greater effort. Two contest ideas to encourage salesmen in this respect are as follows:

"Poker Hand" Sales Contest. The 52 playing cards are individually sealed in an envelope and displayed upon a central blackboard in the store. When a contract has been sold, signed, and approved, the salesman draws one of the envelopes. At the expiration of the contest, the salesman holding the highest poker hand from cards drawn wins a prize. A short time limit—never longer than two weeks—is advisable.

"I Made It"—"I Failed" Contest. This contest affords the salesman the chance to avoid declaring that he failed. A minimum monthly goal is set for each salesman, and the total pasted on a bulletin board. Separate pieces of paper covering weekly performance, with "I made it" or "I failed" written on them are supplied to each salesman. He signs the slip agreeing with his weekly performance and this is put on display.

Meet 'Zeke'

This is "Zeke" Carrithers, who has recently joined the News as Special Representative. Although Zeke's face doesn't stop clocks, it is true that the editor broke his camera taking this picture.

Clarke Elected Chairman Of Apex Board

CLEVELAND—Election of R. H. Clarke as chairman of the board of the Apex Electrical Mfg. Co. here was announced by Apex officials last week. Mr. Clarke, a director of the company for several years, has served on the boards of Otis Steel Co. and Midland Steel Products Co.

Cleveland Distributors' Sales Up in August

CLEVELAND—Reported sales of Cleveland distributors of electric refrigerators to consumers and dealers during August showed an increase of 19.1 per cent over the sales reported during the same month last year, says Ralph H. Jones, secretary of the Electrical League of Cleveland.

Sales reported for the first eight months of 1935 as compared with figures for the first eight months of 1934 show a slight decrease of less than 2 per cent, and Mr. Jones believes that there has actually been an increase in this period, due to the fact that the method of collecting sales figures last year were not as accurate as they have been this year.

Penn Issues Condensed Catalog on Controls

DES MOINES — Penn Electric Switch Co. has just issued a revised and condensed catalog covering the principal types and models of its line of commercial, semi-commercial, and domestic replacement refrigeration controls.

New features, including bi-metal overload protection in both the Penn type L commercial switches and the type 201 domestic controls, are catalogued in this condensed publication.

Refrigeration control specifications and data are contained in this new catalog.

Crosley Gives Hammond Dealer New Franchise

HAMMOND, Ind.—J. W. Millikan, who handled Crosley products here for many years, has been refranchised, Crosley officials report.

Nebraska University Study Delves Into Kerosene Units & Gives Comparative Data

By E. B. Lewis and M. P. Brunig, Research Engineers, College of Agriculture, Department of Agricultural Engineering, University of Nebraska

REFRIGERATION without ice for home use may be said to be a product of the last decade. The "electric" refrigerator was a luxury 10 years ago and was found in but a few homes, but today it has a place among the necessities of a modern home. Since an "electric" refrigerator requires electricity for operation, many homes are not able to have this convenience.

Where electricity is not available and ice difficult, inconvenient, or expensive to obtain, many people are quick to consider other types of refrigeration. In a few cases the gasoline engine has been used to operate an "electric" refrigerator but this lacked the automatic features and convenience of the electric motor. One firm now has a special gas engine-operated unit for rural use, and various makes of "heat" refrigerators have been on the market for several years.

Many Inquiries from Farmers

These types are of special interest to the farmer. Only a small per cent of Nebraska farmers have electricity today, and even the present plan of extension of rural electric lines does not give assurance that all farmers can or will have electricity in the immediate future. The many inquiries that have come to the Agricultural College for information about the different types of "heat" refrigerators have prompted the investigation reported in this circular.

Refrigeration by heat is not new. It dates back more than a hundred years to the time of Faraday's experiments in liquefying gases. It has been used in commercial ice plants, but apparently it was not as satisfactory as the power driven compression plants now used. A very simple form of heat refrigerator was sold quite extensively a few years ago, but it did not continue in favor because its capacity was too low and its operation too much of a chore."

In 1934, kerosene-burning refrigerators manufactured by three companies were on the market in Nebraska. Two of these were of the intermittent type and the third was of the continuous operation type.

Operation of Intermittent Type

In operating the intermittent refrigerator, a small tank is filled with kerosene daily and the burner is lighted. This burns until the kerosene is consumed and the process "stores" refrigeration for a 24-hour period.

The process may be briefly explained as follows. Heat from the kerosene burner distills ammonia vapor from a tank over the burner. This vapor, which is cooled by means of the water, condenses to a liquid. The heat generated by the kerosene burner is absorbed by the tank of water and from there it is transmitted to the air in the room. After the kerosene is consumed and the application of heat ceases, the cooling reduces the pressure on the liquid ammonia which begins to boil and evaporate. This evaporation process requires heat which is taken from the refrigerator and causes "cold."

Ammonia vapor produced is absorbed by water within the system which lowers the pressure so that more vapor is given off and this continues until the liquid ammonia has all evaporated and been absorbed by the water. The cycle is then complete and the burner must be lighted again to distill the ammonia from the water.

The quantity of ammonia in this system is one factor determining the amount of refrigeration possible. The rate of heating and the amount of heat required depend on the quantity of ammonia. Other factors contributing to effective refrigeration are those which influence the dissipation of heat from the cooling tank of water.

Too hot a room makes it impossible to dissipate heat rapidly enough. Not enough cooling water in the tank will reduce the efficiency since, if the water becomes too warm, ammonia will not condense and the cooling effect from evaporation of the liquid ammonia is not obtained. *Heat must be dissipated* or removed if cold is to be produced.

Air-Cooled Continuous Unit

The continuous operation type as sold during the summer of 1934 did not require cooling water but was "air cooled." In this, a burner operates constantly and the distillation, condensation, and evaporation are continual processes carried on concurrently. The operation of this model is based upon the same principle as the "gas" refrigerator except that the heat is supplied by a kerosene flame instead of a gas flame.

The question usually asked is—"How about these kerosene-burning refrigerators—are they any good?" In an effort to secure as good an answer as possible to this question, descriptive literature and information regarding all the known kerosene-burning refrigerators were obtained. After a study of this literature, and some discussion with dealers, it was decided to buy one refrigerator for laboratory use and obtain observations on as many others as possible. For various reasons an air-cooled, continuous operation machine was purchased, and all laboratory observations are based on this one model.

In this report the refrigerators are referred to as: The "A" machine, the "B" machine, and the "C" machine.

There were fewer of the "B" machines in the immediate territory and fewer of them were observed. They were sold under the manufacturer's name and in every case observed were giving satisfaction to the users and there were no complaints. In some cases machines of this make had been in use several years.

'B' Machine Better than 'C'

The "B" machines maintained better refrigeration temperatures in hot weather and could be depended on for ice cubes under more severe usage than the "C" machine. Apparently they have a greater capacity. The "B" machine was used to obtain the data for the kerosene unit in the graph temperatures maintained by various kinds of refrigerating devices, shown in Fig. 1.

The "C" machines were of smaller refrigeration capacity and in nearly every case the owners were not satisfied. They had expected performance comparable with an electric refrigerator and found that when it was very warm they had no ice and the refrigerator temperatures were higher than desired. Indications are that this refrigerator might be very satisfactory in a cooler climate. (From observations made, it might be concluded that this refrigerator would make a good substitute for the ice-box but is cheaper to operate and more convenient, unless ice is very cheap and easy to get. The temperatures obtained were probably lower than those in the average ice-box.

Price Factor on 'C' Unit

All models of this refrigerator observed were sold under a jobber's name and not under the manufacturer's name. Efforts to locate 1934 models for observation were not successful in the short time devoted to this study. The 1935 model may be more successful. Price seemed to have been an important factor in selecting the "C" machine.

From the standpoint of refrigeration, there is some objection to the rise and fall of temperature indicated by this curve. If compared with the ice-box temperatures indicated in Fig. 1, this curve looks much better. If the slogan, "50 degrees is the danger mark," is used as a basis of criticism, it will be observed that this line is crossed at least twice during the week, and once for approximately 10 hours.

'A' Machines Satisfactory

The "A" machines were practically new on the 1934 market but a considerable number has been distributed in the state. With but one exception, the "A" machines seemed to give satisfaction and had enthusiastic users.

The "A" refrigerator was used in the laboratory and similar ones were observed in several homes. The only case observed where the owner was not satisfied could be explained by saying that the conditions for operation were not favorable. The company selling this unit took it back and used it for a time as a demonstrator.

The unit had been placed in a home with a very low ceiling and where air did not circulate freely enough to dissipate the heat. Units observed in other homes seemed to be giving excellent satisfaction.

Results obtained with the "A" machine in the laboratory will give the reader an idea of what might be expected in the way of satisfaction from use in the home. When the room temperature was as low as 75° F. and the box was cold, a single tray of ice could be frozen solid in less than two hours time; but if the box were not very cold or the room were at a higher temperature, more time was required.

For example, with a room temperature of 90° F. and a box temperature of 64° F., two trays of water were put in the refrigerator at 10:30 a. m., by 11:00 the refrigerator had cooled to 56.5° F., at 11:30 to 53.5° F. and the water in the tray was partially frozen. The refrigerator was opened a total of six times and the tray inspected each time.

Cost of Refrigeration

Under such conditions the two trays did not freeze solid until 2:40 p. m., requiring a total time of four hours and ten minutes. By this time the refrigerator temperature was 47.5° F.

The ice-boxes in Fig. 1 used 25 lbs. of ice per day. At 40 cents per cwt. this would be 10 cents per day or $3 per month.

Readings were taken on two representative electric refrigerators in Lincoln this summer. These machines had been in service only a few weeks. One, from June 14 to July 14, used 79 kilowatt-hours. The other, from July 23 to Aug. 22, used 70 kilowatt-hours. At a cost of $0.35 per kilowatt-hour, this is $2.77 and $2.46 per month.*

Refrigerator "B" was using approximately two quarts or less of kerosene per day in addition to skipping a day occasionally. We made no attempt to obtain exact cost of operation. If we assume the full two-quarts per day, this will be 15 gallons per month. If 15 cents per gallon is allowed for kerosene, the monthly bill for fuel is $2.25, which is lower than either the ice-box or the electric machines mentioned above. The "A" machine in the laboratory was operated with a low flame using 2.07 gallons of kerosene per week, and on full flame this is increased to 4.65 gallons per week.

If electricity, ice or kerosene prices vary from these, the comparison will vary accordingly.

Effect of Room Temperature

When the refrigeration is limited by a cake of ice, or by the size of a flame, it is to be expected that the higher the room temperature is, the higher the temperature will be in the refrigerator. The relation between room temperature and refrigerator "A" temperature when the burner was set at the fastest burning position is shown in Fig. 2.

It is important to notice in these curves that in all cases except one, the starting temperature was not low

(*Concluded on Page 7, Column 1*)

*Editor's Note: These figures on current consumption by an electric refrigerator appear to be a little high, as Edison Electric Institute studies put the monthly average current used by an electric refrigerator at 50 kwh. The fact that the recordings were taken during July and August may account in part for this apparent discrepancy.

Conversely, the standard for ice consumption set at 25 lbs. seems low, as data released by ice manufacturers puts the minimum consumption during summer months at 30 lbs. a day.

Unbiased Comparative Refrigeration Data

This article by the University of Nebraska research engineers should be of interest to everyone connected with the refrigeration industry, not only because it presents some interesting data on the operation of kerosene refrigerators, but because it presents authentic, unbiased comparative data on electric refrigeration and other types of household refrigeration equipment.

Particularly interesting is the chart shown in Fig. 1, which shows the temperatures maintained by various types of household refrigeration devices.

Also of interest is the reaction of some users of up-to-date refrigeration equipment on farms, demonstrating very vividly that there is a real farm market for household refrigeration equipment.

Temperatures Maintained by Various Types of Equipment

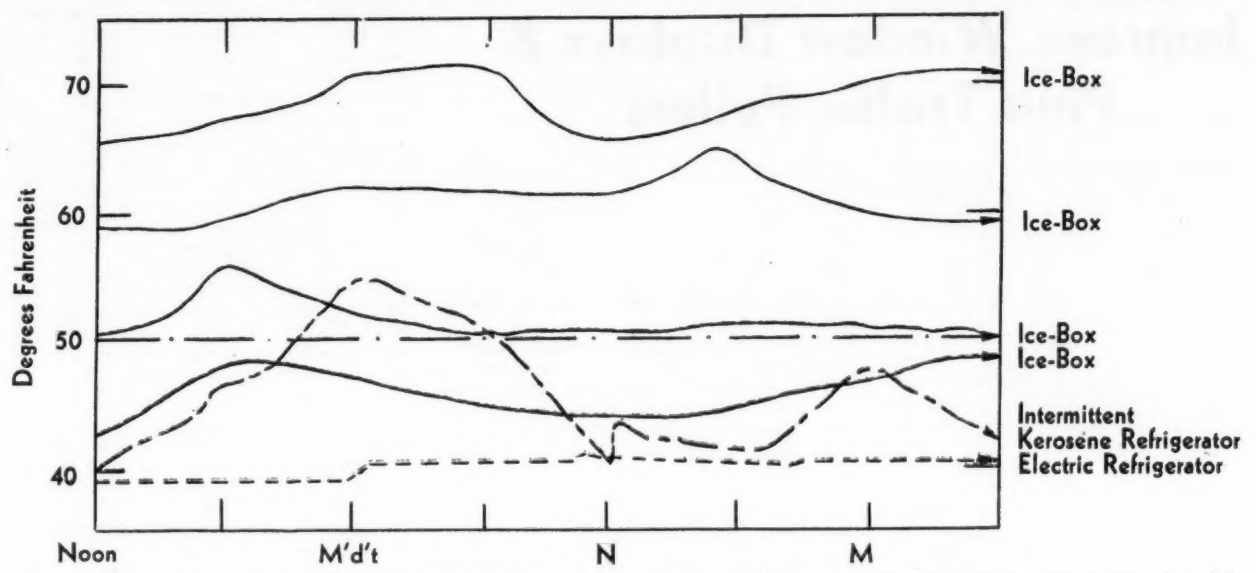


Fig. 1—The variation between the temperature of an electric refrigerator, the "B" kerosene-operated refrigerator, and different grades of ice boxes is shown here. Tmperatures were taken while units were in use in homes.

Operation in Different Temperatures

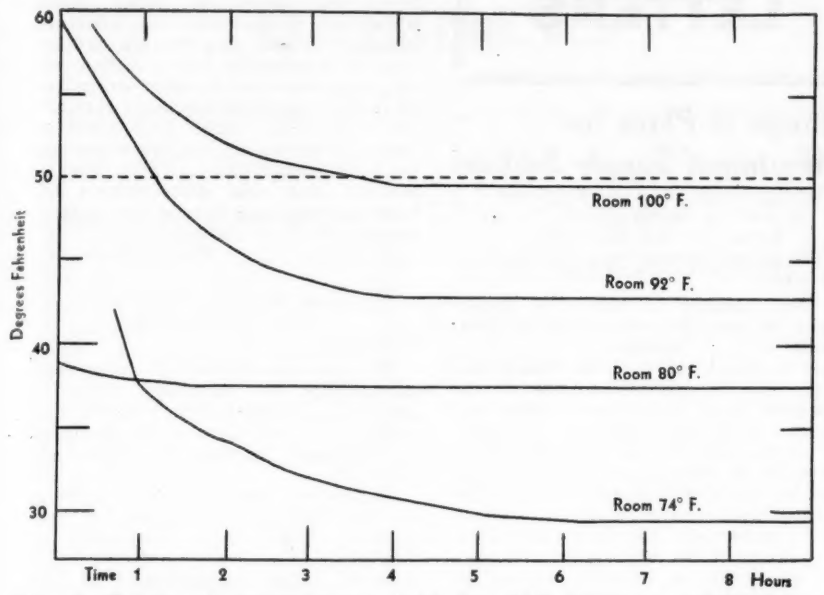


Fig. 2—Graph of temperatures held by "A" kerosene refrigerator operating with full flame in rooms of four different temperatures.

Nebraska University Survey Gives Data On 3 Types of Kerosene Refrigerators

(*Concluded from Page 6, Column 5*)

and that time was required for the unit to reach a constant low temperature. This time will depend on the amount and the temperature of the food in the refrigerator.

With a room temperature of 100 degrees, more time is required to bring the refrigerator temperature below the 50-degree mark. Under a constant room temperature of 100° F. or higher, rapid freezing in the ice tray or quick cooling of food in the refrigerator can not be expected.

In most parts of Nebraska under normal temperatures, many consecutive hours of 100° F. or higher are not expected and a refrigerator has some chance to "recover." When higher temperatures prevail, the problems of refrigeration are increased.

Previous refrigeration studies would indicate this relation between box and room temperatures. Circulation of air within the room helps with the dissipation of heat by carrying the warm air away from the heat dissipation unit. The same consideration of favorable location is as necessary, or more so, with kerosene units as with electric refrigerators.

Clean Burner Essential

Observations in the laboratory and home indicate that it is essential to have a clean burner in the kerosene-burning refrigerator. A poor grade of kerosene or a dirty burner will cause smoke and disagreeable fumes and less effective refrigeration. Clean operating conditions and freedom from direct drafts are conducive to the best operation of the burner.

For the refrigerator itself, the same rules of cleanliness, ventilation, and use apply as for the "mechanical" refrigerator.

Since we have mentioned the instances of dissatisfaction caused by low capacity of some makes of refrigerators, it is appropriate that we also mention some of the many comments of satisfied users.

One user of a "C" machine spoke very enthusiastically of the performance of his machine, making particular mention of always having ice cubes on hand for an ice pack during a serious illness of his mother.

After three years use of a "B" machine, a family in northern Nebraska is very enthusiastic over it. They were not concerned about the cost of operation since the refrigerator was so very convenient, especially in threshing season, and they didn't have to bother about getting ice.

Milk Must Be Refrigerated

Another "B" user also expressed satisfaction although she admits that it is not quite so good in *very* hot weather. She uses it the whole year "because the boys are spoiled and won't drink their milk unless the temperature is right." They do notice the heat from the burner somewhat in the summer but it is a help on cool mornings in the spring and fall.

One "B" machine user liked the idea of having a kerosene burner extinguished while no one was at home.

One user of an "A" machine stated that 15 gallons of kerosene were used in 35 days (including 15 days of over 100° F. maximum). The room, which was well ventilated, was not noticeably heated. He stated, "I wouldn't be without it for a thousand dollars if I couldn't get something else as good." It was considered a very small chore to clean the burner and it didn't have to be done very often. He used a first grade kerosene.

No Trouble with Cheap Oil

Another pleased "A" machine user stated that he was using six-cent kerosene and had needed but very little over one-half gallon per day although using full flame all the time. The cheap fuel had given him no trouble. (Cheap fuel would be expected to cause trouble with a lower burner more quickly than with a high flame burner since more carbon would form).

An "A" machine near Lincoln is located under a stairway where ventilation is fair. It is giving satisfaction and operating with a medium flame, using a little over three gallons of kerosene per week.

9 Utility Salesmen Are Kelvinator's Guests

DETROIT—Nine salesmen of four utility companies in New England were entertained at the Kelvinator factory here, recently, as a result of their being high salesmen in the Kelvinator campaigns among utility outlets in the territory of L. L. Langley, district manager for Kelvinator Corp. at Durham, N. H.

The men were introduced to factory officials, heard speeches by department heads, took a trip through the factory, and saw Kelvinator movies, besides being entertained at show places and resorts. Mr. Langley accompanied the party.

Those who made the trip were: William Whipple, Milford, N. H.; George Yeaton and F. H. Philbrook of the Public Service Co. of Manchester, N. H.; Raymond F. Woodcock, Sanford, Me., and C. E. Gile, York Village, Me., of the Cumberland County Power & Light Co.; A. L. Foss and R. A. Fernald, Millinsocket, Me., and Floyd Jack Warren, South Brewer, Me., of the Bangor Hydro-Electric Co., Bangor, Me.; William Freeman, Hoosick Falls, N. Y., of the Central Vermont Public Service Corp., Rutland, Vt.

Knape & Vogt Marketing Replacement Hardware

GRAND RAPIDS, Mich.—Replacement hardware for early models of household electric refrigerators is now being made available in either nickel plated or chrome finish by the Knape & Vogt Mfg. Co.

The company has also just issued a new 160-page catalog giving information on hardware for both household and commercial refrigerators, and wire shelves and gaskets, corner braces and reinforcing angles, and reflectors and lighting equipment.

Ralph Cameron Week Being Staged in G-E Stock Market Drive

CLEVELAND—The current week will be known as "Ralph Cameron Week" in the Refrigerania Stock Market sales campaign now being conducted by the specialty appliance department of General Electric Co.

The week has been so named as a tribute to Ralph C. Cameron, head of department store sales activities and assistant general sales manager. During the week, as extra prizes, 56 salesmen's projector outfits will be awarded. These outfits, which salesmen may carry in their pockets, permits them to "show" the sales story to prospects in homes or offices.

Cameron has had a rapid rise with General Electric. Previously he had many years of actual sales experience, starting as a newsboy and then as a magazine salesman. Later, he sold insurance to help defray college expenses. After graduation, he entered the drug business, and then radio selling claimed his attention.

It was then that he entered the electric appliance sales field and moved on to selling General Electric refrigerators for an Ohio distributing firm. In that capacity he pushed thousands of doorbells and made such an outstanding record that he was offered a position in the merchandising division of the company's refrigeration department here.

Soon afterward he became head of department store activities, and last January, in addition to those duties, he was named assistant sales manager to aid General Sales Manager A. M. Sweeney.

Leonard Film Attracts 800 to Prize Drawing

RAVENA, N. Y.—Advertising of Leonard electric refrigerators by means of a film trailer at the local theater for three weeks and the giving away of free tickets for a chance on a Leonard model, brought 800 people to the theater on the night of the drawing when the winner was presented with the prize by Herbert Hamlin, sponsor of the contest and local Leonard dealer.

The theater management cooperated with Mr. Hamlin in running the movie trailer and in passing out the tickets. Only a small part of the 800 who came to the theater the final night could be admitted, but since many of them had driven in from nearby places, they were told to be back outside the theater when the show was over so that they could be in on the drawing.

Mr. Hamlin reports that two sales of Leonard refrigerators were closed the night of the contest, and that the list of prospects promises to yield many more sales.

New Manuals Issued by American Engineering

PHILADELPHIA—In conjunction with the announcement of a new line of low-pressure units for commercial refrigeration and air conditioning, the American Engineering Co. has issued to its offices and agencies, sales and service manuals of these machines.

The new units are arranged for operation with either methyl chloride or Freon. Complete specifications for each machine are contained in the sales manual.

Sales Idea of the Week

By V. E. Vining, Director of Department Store Sales, Westinghouse Electric & Mfg. Co.

This is the tale of a fish—maybe two.

It seems Oscar was a mountain trout. He lived in a nice little pool with a lot of his brothers and sisters. Altho' Oscar was a mountain trout, he had never actually seen a mountain. In fact, he had come to this pleasant pool, in which he swam lazily all day, as an egg. Mostly he was contented—

But at times, in the cool of the evening, or in the hour of dawn, a strange restlessness came over him. He would close his eyes and dream strange dreams. He dreamed of himself as a fighter and the vision carried him through terrific battles, with rushing water falls and boiling rapids, battles with bigger fish for life itself, battles of honor, battles for the very sport of battling. Each battle ended the same—just as he vanquished his dream opponent he gave a mighty flop into the air and, as his belly hit the water, awakened to his life of reality, shook himself a bit and took up again his sheltered life of endless, aimless, swimming 'round his pool.

Oscar had a right to these dreams. He was the spittin' image of his grandfather Pete.

Now Pete—

There was a fish. He was a hell-bender and a stem-winder. I don't suppose he ever had a real moment of peace in his whole life. He ruled the lesser fish, he fought off the larger ones; he bucked the swift waters and he fought his way up and down the mountain stream with a chip on his shoulder and one eye open even when asleep. He was a leading citizen in his mountain home, feared and respected—a member of the Chamber of Commerce, the City Council, the Rotary Club, and the Elks. There wasn't a soft streak in him. He was hard—

So hard—

That the proud angler who finally landed him into a frying pan, paid him a compliment it is too bad Pete couldn't hear. *"There's a fish!* You can really taste the game in him."

But Oscar—

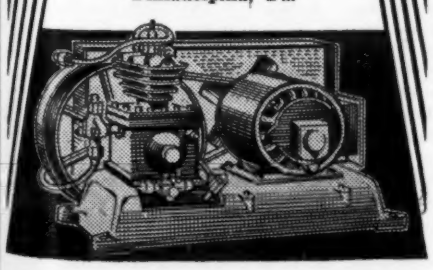
—Despite his dreams of greatness was of a softer generation, designed to be laid out under a sprig of parsley by some dining car chef, or burned to a crisp in a night club by a cook who should have been a blacksmith—a poor, flabby imitation of the real thing.

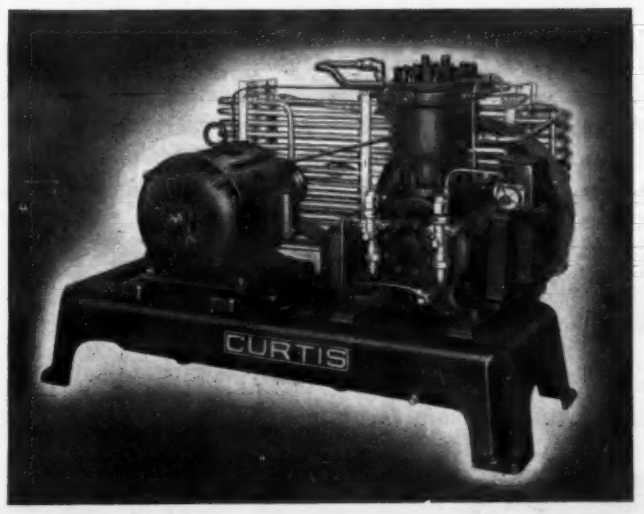
Then, an accident. One day the owner of the fish farm installed a water wheel.

Oscar's life changed over night. His dreams became realities. An Aquatic Don Quixote, his days were one endless effort in battle with his new found enemy—only a water wheel to you and to me—but to him the only opponent in all his life that ever fought back. Glorying in battle, he fought to exhaustion; and exhausted, recuperated only to fight again.

His new life changed his very appearance. He lost his puffiness; he became sleek; his muscles became hard and his blows, at first weak and feeble, became mighty. Even his will strengthened. He had found a mission in life, a purpose—and he won.

Oh no, he didn't stop the wheels of the mill: his mission in life was to become worth eating—and when his time came—he was.





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1936 Models

AUTOMOBILES at present are catching the fancy of the nation. For the first time in the history of the automobile industry, new models are being presented in the fall, rather than at the beginning of the year. And the new models for 1936—dedicated to extraordinary speed and sleekness—have gripped the imagination and captured the tongues of almost everybody.

There are indications that when interest in the new motor cars will have subsided, however, that the public eye will be trained on refrigeration. This season the excitement over new automobile models will have subsided when the 1936 electric refrigerators are brought out, instead of the simultaneous announcements which in the past have caused the two industries to compete for public interest.

What to Expect Next Season

Just as the new automobiles are featuring improved engine performance as expressed in terms of higher speeds, so the 1936 refrigerators will feature mechanical performance—expressed, however, in terms of efficiency and economy. Exact nature of these 1936 models is being guarded jealously, of course, in manufacturers' laboratories; but we think it may be safe to predict the following general developments:

Improved efficiency of refrigerating units.

Lower operating costs.

Increased ice cube supply.

Faster freezing.

Lower temperatures.

Greater use of the Freon family of refrigerants.

Continuation of the swing toward small, hermetically sealed rotary compressors.

More convenience gadgets—trick shelves, and the like—for the interior of the food compartment.

Continuation of many 1935 deluxe models in 1936 lines.

Lower prices on larger boxes.

More value for the buyer's money in every line.

Performance to Be Emphasized

Emphasis on performance this coming year rather than style will probably be the most important development of the launching of the 1936 electric refrigeration season. Advertising will feature operating economies, claims and counterclaims will be made, and competitive tests by dealers are not beyond the realm of possibilities for next spring, declare some competent observers.

The demand for a bigger supply of ice cubes seems likely to be met by more than one manufacturer. Also, the lesson taught by Sears, Roebuck when it so successfully placed all its promotion behind a 6-cu. ft. model, rather than the inadequate 4-cu. ft. box which had been the industry's price leader for the last several years, has been taken to heart. If advance indications mean anything, the mail order houses will be in for the fight of their lives on larger-sized refrigerators in 1936.

Inventories in Healthy Condition

One of the most satisfying aspects of the current situation in electric refrigeration as the industry prepares for next season is the fact that inventories will be pretty well cleaned out. Along in June the field stock situation looked serious—warehouses and dealers' floors were loaded to the highest point in the history of the business, and sales weren't rushing along at the rate predicted at the beginning of the year. But concerted effort on the part of the entire refrigeration industry (in which effort ELECTRIC REFRIGERATION NEWS contributed its share by devoting five successive whopping big issues to the latest developments and ideas in specialty selling), coupled with lowered finance rates and the FHA program, made late July and August successful beyond the dreams of the most optimistic. By the first September the industry had sold more refrigerators than had been moved during the entire year of 1934, when a new all-time record was established.

As a result, the industry's inventories are in an extraordinary healthy situation; and with the exception of small stocks of higher-priced porcelain models—which can be carried over easily into 1936 lines—the refrigeration business should be able to get off to a fresh start by January 1.

Promotion Campaigns to Start Early

Like the automotive industry, electric refrigeration manufacturers, distributors, and dealers, won't keep secret the fact that in 1936 they will offer exceptional values to the buying public. "Proof selling" and actual demonstrations will be in greater vogue than ever before. And advertising and promotion campaigns will not only get under way earlier next season, but will be more intensive and run longer than they did in 1935. Almost every advertising manager in the industry will be working with a bigger budget.

Making predictions is, of course, an exceedingly precarious business. It is more than possible that some of the future developments outlined and hinted at in this editorial may not come to pass. But it is true that these predictions reflect current thinking in the industry, and that in the main manufacturers are working toward *better performance* and *greater value* in their 1936 models. All of which should be indeed encouraging to dealers and distributors out on the firing line.

WHAT OTHERS SAY

Our Distribution System Is Pretty Good

THE system of distribution in use in the United States has been subject to continual criticism in recent years. It has been charged repeatedly that the costs are too great, that the middleman gets far more of the consumer's dollar than he is entitled to, that the producer is not properly compensated for his efforts, and so on. In fact, much of the legislation which has been proposed and enacted at Washington has been based on the theory that the present distribution set-up is inefficient and wasteful.

Paul S. Armstrong, general manager of the California Fruit Growers' Exchange, who has devoted 20 years to helping distribute Sunkist products, told *Advertising Age* in an interview recently, that the experience of the exchange with the distribution machinery of the country has demonstrated that it is both efficient and economical.

It is so good, in fact, that the exchange, which markets 75,000 carloads of its products a year, is not even tempted to consider establishing its own facilities for distribution, which its large volume of business would easily make possible.

The exchange uses the services of the regular trade machinery of the fruit and produce industry for disposing of oranges and lemons on the auction markets, the product then passing into the hands of 4,000 wholesalers and half a million retailers who supply America's breakfast tables with orange juice.

"The producer must realize," he said, "that production is only one part of the business of supplying consumer needs. Production is important and necessary, and the producer must receive compensation for his efforts; but distribution is equally important, and becomes especially so when a product must be moved conveniently and economically into the hands of consumers who are an average of 2,600 miles away from the point of production."

Distribution is of course not perfect. Improvements can be made and are constantly being made to create still more efficient methods of moving products into consumption. But it should be remembered that the present system has been evolved as the result of many years' experience, and that in the constant battle of competitive methods the more efficient have tended to survive. The present system is reasonably good, because otherwise it could not have been continued.—*Advertising Age.*

LETTERS

Change in Plans for Meeting of Supply Jobbers

Refrigeration Service Engineers' Society
Office of the Secretary
433 North Waller Ave., Chicago
Publisher:

I was pleased to have the opportunity of meeting with you on your recent visit to Chicago.

As I explained to you, there has been some confusion because of the invitation sent from your office and a letter from this office for the meeting of the manufacturers and jobbers on both Wednesday and Friday the week of the Refrigeration Service Engineers' Society convention.

As I expressly stated in my invitation, the writer's interest in the matter was only to provide an opportune time and meeting place in view of the attendance of the jobbers and manufacturers which we hope to have at our convention to discuss matters of mutual interest to both of these groups.

Note: See news article on front page announcing change in plans for jobber meeting—Editor.

It is my understanding that it is your desire to hold open house at the offices of the Business News Publishing Company for manufacturers, parts distributors and jobbers, which you are arranging for Wednesday, October 23, from the early afternoon until eight p. m.

While our program calls for a visit to the Kelvinator plant for the afternoon of that day, I am sure that those manufacturers and jobbers who desire will find time to visit the Kelvinator plant and also return in ample time to accept your invitation to visit the publishing offices of the NEWS and then return in time for the Exhibitors' Frolic at the Hotel Fort Shelby, which will be held that evening.

I believe that the situation is now clarified and will not interfere with the program of the Society.

H. T. MCDERMOTT,
National Secretary.

W. C. Du Comb Co., Inc.
Factory Equipment and Supplies
6335 Palmer Ave., East, Detroit, Mich.
Publisher:

Referring to yours of Sept. 25th in regard to the dinner meeting to be held Oct. 23rd at the Hotel Wardell, at 6:00 P. M. would say that both Mr. Du Comb and the writer will be glad to attend. Thank you.

M. J. LAURIE,
Refrigeration Engineer.

Automatic Products Company
121 North Broadway
Milwaukee, Wisconsin
Publisher:

Thank you for your invitation to your party, which you are giving to the refrigeration supply jobbers on Wednesday evening, October 23.

It is now my intention to be in Detroit on October 23, and I am happy to accept your invitation, and will be there unless some unforseen business makes it impossible.

R. W. JOHNSON, President.

Ermstat Company
1825-39 Wylie St., Philadelphia, Pa.
Publisher:

We would like to take this opportunity of thanking you for your kind invitation to attend the party which is to be given Refrigeration Jobbers on Wednesday Evening, October 23, at Detroit. You may count on one or more members of our organization being present.

We believe that this is a step in the right direction, and want to assure you and the other members of the committee, of our cooperation to the fullest extent.

GEORGE C. TATEM, President.

Houde Engineering Corp.
Division of Houdaille-Hershey Corp.
Buffalo, N. Y.
Publisher:

Thank you for your courtesy in inviting me to join you at dinner on Oct. 23.

It develops that another engagement will take me quite a ways from Detroit that day and it will be impossible to be present.

I presume some of our engineers will attend the convention, and they will be instructed to look over your new home some time during their stay.

RALPH F. PEO,
Vice President & General Manager.

Fredericksen Co.
Saginaw, Michigan
Publisher:

As a manufacturer and supplier of one of the vital parts of the electric refrigerator compressor, the seal nose, we would deem it a great favor if you would extend an invitation to the dinner which is to be held at the Wardell Hotel, Oct. 23, to our representative, H. C. Limbach, 3105 E. Grand Blvd., Detroit.

May the writer state that Mr. Limbach has been in close contact with the refrigerator manufacturers throughout this and foreign countries and is constantly being called upon to give advice and to offer suggestions to the refrigerator engineer regarding the seal nose, which you know has been a "bugaboo" to the compressor field. Through his efforts the seal leakers and seal disturbances have been greatly reduced in the past few years.

FREDERICKSEN CO.

Penn Electric Switch Co.
Des Moines, Iowa
Publisher:

We are in receipt of your letter dated Sept. 25, enclosing ticket and extending invitation to join the party which you are giving the Refrigeration Supply Jobbers on Wednesday, Oct. 23.

It will not be possible for anyone at Des Moines to attend this party. However, we have forwarded the ticket to Paul Penn, manager of our Detroit office, suggesting he avail himself of this privilege.

M. E. HENNING,
Vice President.

Julien P. Friez & Sons, Inc.
Baltimore St. & Central Ave.
Baltimore, Md.
Publisher:

We thank you for the invitation extended to the writer to be present at the party you are giving to the refrigeration supply jobbers on Wednesday evening, Oct. 23.

Should he be anywhere near Detroit, at that time, he will attend, though that is unlikely. Therefore, we are taking the liberty of passing your letter on to our factory representative for the state of Michigan, Mr. W. W. Watson, 6432 Cass Ave., Detroit, Mich., and if that is agreeable to you, we would like to have him present and deputized for us.

DENIS MCCORMACK.

The Central Brass Mfg. Co.
2950 East 55th St., Cleveland, Ohio
Publisher:

We have received your memorandum of Sept. 25 advising us of a dinner meeting of Refrigeration Supply Jobbers to be given at the Hotel Wardell on Wednesday evening, Oct. 23.

Please be advised that our representative, William B. Walker, Jr., who has his offices at 8737 Kercheval Ave., Detroit, will attend this meeting in behalf of our company.

Therefore, may we suggest that you send a ticket to Mr. Walker and charge this direct to our company which we trust will be satisfactory.

M. W. BERNSTEIN, Sales Mgr.

Wagner Electric Corp.
6400 Plymouth Ave., Saint Louis
Publisher:

Replying to your letter of Sept. 25, enclosing personal invitation to join the party which you are giving to the refrigeration supply jobbers on Wednesday evening, Oct. 23, at Hotel Wardell, inasmuch as the writer will be unable to attend I would appreciate it greatly if you would send an invitation to our Mr. R. L. Wells, c/o Wagner Electric Corp., 5535 Woodward Ave., Detroit, so that he may attend in my stead.

EDWIN H. CHENEY, Vice President.

Patterson Book?

Maryland Refrigeration Co., Inc.
York Refrigeration, Air Conditioning
121 North Greene St.
Baltimore, Md.
Editor:

We should like to know whether you intend to make a reprint of your articles on Mr. J. H. Patterson, president of the National Cash Register Co. If so, we would be very much pleased to receive a copy of the reprint with a suitable binder.

We believe there is enough interest in these articles that if you would mail out a postcard to each of your subscribers, they would gladly pay for the cost of having one of these articles sent them.

J. J. MURPHY, President.

Engineering News

Fedders Manufacturing Co., Inc.
Buffalo, New York
Publisher:

Please pardon these somewhat belated comments, due to the fact that the writer has just returned from an extended trip throughout the trade. I hasten to tell you how pleased I was to read the September 25 issue of the ELECTRIC REFRIGERATION NEWS and particularly note the several columns devoted to engineering news items.

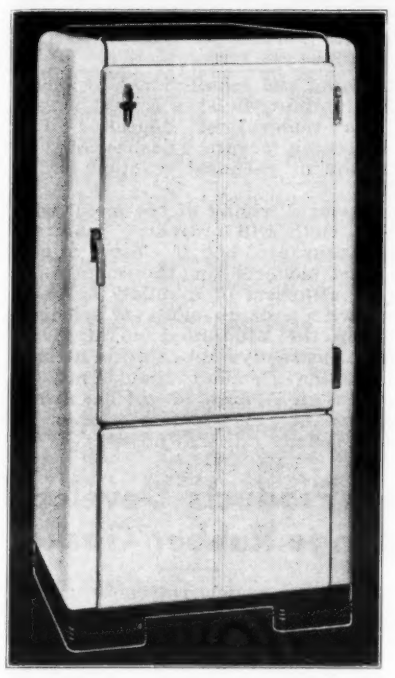
As you undoubtedly have realized, we have considered the ELECTRIC REFRIGERATION NEWS as the outstanding trade paper in the industry and want to take this opportunity to tell you how much we appreciate the opportunity afforded us to tell the industry about the engineering features contained in the products which we are serving to the field.

With kind personal regards to both yourself as well as Messrs. Taubeneck and Redeker.

W. D. KEEFE, Sales Mgr.,
Refrigeration Division.

CABINETS

Vertical 'Streamlining'



* * *

Sanitary Announces New Cabinet Design

FOND DU LAC, Wis.—Sanitary Refrigerator Co. is introducing a 1936 line of "streamlined" household electric refrigerator cabinets in five sizes ranging from 4 to 10 cu. ft. capacity.

"Vertical streamlining" is the design feature of these cabinets, with three upraised lines running down the cabinet door and continuing down through the unit panel, and hardware and nameplate in sleek vertical modern design.

Exterior finish of the cabinets is Dulux, the Sanitary Refrigerator Co. just having completed the installation of the latest type of continuous high bake finishing ovens. Interior will be one-piece porcelain with rounded corners.

Cabinets will be insulated with Balsam Wool, sealed against the interior lining. Breaker strips will be maple, finished in black. The brass hardware has a chrome finish. Locks are of the automatic snap type, which holds the door tightly against the face of the refrigerator.

Sears Asks for Designs of Ice Refrigerators

CHICAGO—Sears, Roebuck & Co. is reported to have asked manufacturers of ice refrigerators to submit designs and costs for a unit which the company may offer for sale under its own name next year, along with its line of Coldspot electric refrigerators.

It is understood that the mail order house is interested in marketing a stylish box of improved design.

Crosley Dealer in Chicago Remodels Store

CHICAGO—The Roseland Music Co., Crosley dealer here, is remodeling its store both inside and out.

2 125-ft. Ovens Are Installed on Lines of Midwest Stamping Co

MORRISON, Ill.—Major step being taken by the Midwest Stamping & Enameling Co. of this city to improve and increase the production of its line of household electric refrigerator cabinets is the installation of two high-temperature, 125-ft. continuous ovens, with a temperature range from 250° F. to 400° F., declares J. C. Battles, Midwest Co. sales engineer.

"These ovens will have a capacity of 200 finished cabinets in eight hours, and will enable us to give our customers the best of refrigerator finishes," Mr. Battles says.

The company is also building a complete new finishing room and is revamping its entire assembly line.

Experimental and research activities conducted during the past few months under the direction of Mr. Battles have dealt with the following problems in connection with the production of the 1936 cabinet lines: cleaning and preparation of metal parts for finish, development of an all-steel frame; selection of hardware, adoption of improved methods of handling parts and cabinets during process of fabrication finishing and assembly, and consideration of several types of insulation.

Midwest Stamping & Enameling is now making 16 standard household models and 15 commercial cabinets. The household models have a lacquer, Dulux, or porcelain finish.

Announced recently by the company was a new line of three large household models (12.5, 15.6, and 19.2 cu. ft. capacity) finished throughout in porcelain, and featured with decorative designs on the doors.

Many Manufacturers Are 'Bonderizing' Cabinets To Protect Finish

DETROIT—Despite the fact that the refrigeration industry specifies the best grades of finishing materials for its cabinets, and applies them in accordance with best accepted practices, the corrosive conditions with which a refrigerator has to contend has made finish permanence a problem, declare engineers of the Parker Rust Proof Co. here.

Parker's "Bonderizing" finish is now being used by most of the refrigerator manufacturers as a rust-preventing base for paint finishes to solve this problem, claim the engineers.

They point out that the "Bonderizing" process was first proved in the automobile industry, as a protector of the finish on fenders and other sheet metal parts. Automobile parts are subjected to the corrosive effects of rain and snow, and to the eroding action of flying mud and slush. While refrigerators are not subjected to these conditions, they do have to contend with wide temperature variations and humid kitchen atmospheres, which set up hazards to paint finishes.

Parker officials are suggesting to manufacturers using their "Bonderizing" process that the use of this process be billed as an additional sales feature, with emphasis on lower service costs and the elimination of the necessity of ever having to recondition the refrigerator.

Breaker Strips Aid Cabinet Insulation

NEW YORK CITY—Breaker strips for household electric refrigerators, says R. E. Drake, sales manager of Panelyte Corp., are used primarily for two purposes: (1) as an insulating medium; and (2) as a means of increasing the beauty and "eye appeal" of the refrigerator.

These are the primary considerations, states Mr. Drake, but the secondary requirements are also important. A material suitable for breaker strips must have a high degree of resistance to surface abrasion, chipping, swelling, and warping. It should not rot, split, stain, or absorb odors, and should not be affected by acids or alkalies.

As an insulating material, breaker strips serve to prevent the transmission of heat from the outer surface of the door cabinet to the inner surfaces. In serving as an insulator the breaker strips reduce the possibility of condensation or the formation of frost on the door edges.

A bakelite product, such as is manufactured by Panelyte, meets these requirements, says Mr. Drake. Panelyte has a smooth, black surface which retains its finish. An occasional wiping with a damp cloth is all that is required to preserve its glossy finish, claims Mr. Drake.

G-E Co. Orders Increase 34% in 3rd Quarter

SCHENECTADY — Orders received by the General Electric Co. for the third quarter of 1935 amounted to $54,400,819, compared with $40,458,901 for the third quarter of 1934, an increase of 34 per cent.

Orders received for the nine months amounted to $158,943,765.

New High-Baked Cabinet Finish Is Introduced by Bradley & Vrooman

CHICAGO—Bradley & Vrooman Co., manufacturer of refrigerator cabinet finishes, have completed laboratory work on a new high heat baked finish, and are now introducing it to the field under the name "High Bake Porceloid."

This new enamel, say Bradley & Vrooman officials, is a high bake finish which combines sensible ease of application in the plant with trouble-free utility in the field.

Reports on tests of this new finish are being compiled now and will be available within the next week, state company officials.

Webb Heads Appliance Dept. in Mark Store

MIAMI, Fla.—Jack Webb, formerly manager and vice president of the Page Electric Co., has been appointed manager of the new electric appliance department of the Mark Store, which will handle General Electric products.

Formation Makes 'Ace' Parts Easy to Clean

NEW YORK CITY—The non-porous construction of American Hard Rubber parts for commercial refrigerators which make it moisture, corrosion, and vermin-proof, also make it easy to keep clean, claim company officials.

Cleaning agents such as ammonia, lye, brine, etc., do not affect the material itself, or its polished finish.

Company officials also declare that Ace hard rubber parts are easily interchangeable, so that any parts which may have become accidentally damaged or broken can be quickly replaced.

New Dealership's Salesmen To Eat Chicken or Beans

SAN FRANCISCO—Hale Brothers Co. of this city opened its Frigidaire dealership with a "chicken or beans" sales campaign, with winners eating chicken, losers beans. During the first week of the drive, two men sold six units each, several others three and four.

CABINETS

Lindsay Says Cabinet's 'Stamina' Will Be Important if Operating Cost Is Featured in Sales Talk

By Harvey Lindsay, President, Dry-Zero Corp.

WHEN they consider cabinets, electric refrigerator manufacturers split into two groups. One group has never viewed the cabinet with proper respect. They have treated it more like a beautiful lady of vague virtue than like the substantial housewife it really should be. They have given it plenty of fine feathers, but only a minimum of moral stamina.

They have made the cabinet a thing of beauty, but no joy forever to the man who foots the bills. Speaking bluntly, this group's cabinets have been almost as useless as they have been lovely. Instead of being built to keep out heat—which is what runs up the electric bill—their cabinets have become mere carry-alls for chromium gadgets, fancy shelves, and glittering finishes.

Some Combine Utility and Beauty

These are harsh words. While they apply to many cabinets, they do not describe them all. For in the second group there is more than one able manufacturer who has refused to lose sight of the cabinet's fundamental function in the scramble for style and eye-catching accessories. These manufacturers have combined beauty with utility.

Now it appears that the first group must follow suit or buck the current merchandising trend. In the middle of August, the editors of ELECTRIC REFRIGERATION NEWS got down on all fours, put their ears to the ground and listened to the rumble of late summer selling. Out of the jumble of merchandising thunder they picked certain sounds that might indicate the direction refrigerator selling will take in 1936.

Summary of Editorial

What they heard was analyzed in an editorial, "The New Battle Line," printed in the issue of August 21. Economy, states the editorial, is the argument that sold refrigerators during the dog days and it is likely to do the same thing next year. Not Just the old-fashioned, hazy talk about money-saving, but stiff, practical stuff appealing particularly to the big potential market among families whose incomes miss the $2,000 a year mark.

It may even be that *comparative operating* costs will form the 1936 battle line, the editorial suggests. If anything like that happens, a lot of manufacturers are going to think about how their cabinets *act* as well as how they *look*. And a lot of refrigerator salesmen are going to learn, for the first time, just how important the cabinet really is.

Factors Determining Cabinet's Value

In determining the fundamental value of a refrigerator cabinet, there are two things to consider. One, its efficiency in preventing heat from getting through to the food compartment. Two, its ability to maintain its efficiency over a period of time. A cabinet may be efficient when new and yet become as worthless as a soapbox after two or three years.

The factors that determine these things are the construction of the shell and the insulation. Of the two, the latter is of greater importance. To demonstrate, let me quote the results of some tests recently made on two refrigerators in the Dry-Zero laboratory.

First we took Refrigerator "A." We put it in the test room for a period of time equivalent to four years of kitchen service in New York City. At the end of the test we found that the cost of operating the refrigerator had increased 82 per cent.

Then we took this same Refrigerator "A," put in another kind of insulation and repeated the test. At the end of the test period we found that the cost of operation had increased only 7 per cent.

Then we went through the same procedure with Refrigerator "B." With the first type of insulation, the operating cost increased 47 per cent. With the second type, the operating cost increased not one penny.

The conclusion to be drawn is simple. Refrigerator "A" had an inferior shell. With poor insulation the cost of operation mounted rapidly, but when good insulation was installed, the poor shell had little effect and operating cost increased only a trifle.

Refrigerator "B" had an excellent shell. Despite this, the poor insulation caused operating cost to mount rapidly, but only half as fast as it would have if the shell had been poorly constructed. And, when good insulation was used in the good shell, there was no increase in cost at all.

Therefore, we can conclude from these tests that the type of insulation used is the major factor in determining the permanent efficiency of a refrigerator.

Facts such as these will become an increasingly important item in the salesman's kit. If the battle settles along the line of comparative operating costs, definite data on the permanence of efficiency will be vital.

Other Data for Salesmen

Furthermore, salesmen will want to know a lot of other things—how water vapor threads its way through watertight seals, and how this same moisture is the thing that causes operating costs to jump, making a current-devouring monster out of a once well-behaved refrigerator.

In 1936, if the ears of the editors of ELECTRIC REFRIGERATION NEWS are good and their interpretation of the trend correct, many old selling arguments and tactics will be discarded. Such things as novelty, institutional glamour, gadgets, cut prices, and vague claims will not carry the load.

For refrigerator dealers, 1936 should be an interesting year. The dealer with the strong sales organization may find himself beaten at the finish by an inferior organization selling a better cabinet.

Detroit Paper Products Develops New Material For Breaker Strips

DETROIT—A new plastic sheet material suitable for breaker strips, crisper tops, ice cube compartment doors, trays, and other shallow-draw products, has recently been developed by the Detroit Paper Products Corp., which also manufactures Hermetex insulation for refrigerators.

The new sheet material is declared to resemble the laminated stock, heretofore used as breaker strips, in appearance only, being made by a new method.

Main feature claimed for the new material is that when used in breaker strips, it gives a thoroughly sealed edge, and consequently an unusually low water absorption. The mechanical properties of the material are the same as in the sheet materials previously available, and where it is used as a structural unit its high tensile and flexural strength is said to assure ample rigidity.

According to A. J. Norton, who heads this new project for Detroit Paper Products Corp., the new material has many other possibilities in refrigerator work besides the breaker strips. Unlike previous laminated phenolic stock, it can be formed into shallow drawn products during the fabricating process, resulting in one-piece, prefinished parts. It has, claims Mr. Norton, greater impact strength than ordinary molded plastics, and can be used in lighter sections to make crisper tops, doors for ice cube compartments, and the small trays that are often used in refrigerators.

Advantage of using the material for these parts, it is said, is that they are made with one fabricating operation and they are light in weight, resistant to water, heat, and cold, are pleasant to the touch even when chilled, and are easily kept clean with a damp cloth. The lustrous prefinished surface of the plastic material is not an applied finish, but is actually part of the piece itself.

"A good breaker strip," says Mr. Norton, "should require no care beyond wiping each time the box is cleaned, and no replacement should be necessary during the life of the box. We feel that the low water absorption of the new material is of great advantage, since the new rapid freezing units now being developed form considerable condensation around the doors of the box, and a water resistant, strong-surfaced material is necessary."

Besides this new sheet material, regular phenolic plastics are finding many more uses in refrigeration construction. In addition to the familiar molded shelf support used by so many manufacturers, there have been developed new extra strength materials which are being very successfully used for door latches, resulting in a rust-proof, corrosion-proof latch which operates more smoothly and quietly than a metal latch.

Also, molded phenolic materials are now suitable for such parts as door handles and several manufacturers have worked out handles in which the molded part only comes in contact with the hand. Thus it feels more pleasant to the touch, never becoming too cold, and the finish cannot wear off or be affected by water, grease, or acids.

Special Processed Aluminum Being Used to Decorate Finish of Cabinet Parts, Ice Cube Trays and Screws

PITTSBURGH—Properties of aluminum which recommend it for decorative use on a refrigerator are that a variety of finishes can be applied to it, and it is also non-toxic and resistant to corrosion, claims Murray V. Churchill of the Aluminum Co. of America.

If 10 models of refrigerators were equipped with aluminum evaporator doors, hydrator covers, and service drawers, all worked out in some harmonious design, there would be no necessity of making any two models look alike, even if the variation were limited to surface treatment of the metal, Mr. Churchill declares.

Frosted Appearance Possible

A rough, dull finish may be imparted to aluminum by sandblasting. By varying the character of the abrasive, the color of this finish may vary from a dark gray to a silvery frosted appearance. Other dull finishes may be produced by dipping or anodizing.

For contrast with the dull surfaces, Mr. Churchill points out, a polished surface may be used. A soft luster derived from many parallel fine lines may be obtained with steel wool. A surface consisting of more pronounced parallel lines may be obtained by means of a scratch brush.

To secure freedom from staining, an Alumilite finish is applied over any finish produced by mechanical means, without changing the appearance of the special alloys used beyond a slight whitening.

Every aluminum surface exposed to the air immediately develops a film of oxide of microscopic thickness. This film is transparent, hard, highly adherent, and impervious to moisture; it serves to protect the metal from further oxidation and other chemical action.

What Alumilite Process Does

The Alumilite process is an artificial method of increasing the thickness of this oxide layer to several ten thousandths of an inch. The hardness of the normal oxide surface is hardly noticeable because the oxide layer is so thin, but an Alumilited surface, in which the thickness of the oxide is so much greater, is scratch-resistant.

If desired, the Alumilite finish can be colored, giving an appearance like that of lacquer or colored enamel. To produce a permanent mirror-like surface, without the slight whitening normally observed after Alumiliting, a special step in the process may be introduced prior to Alumiliting proper. The contrast between plain Alumilite and the special mirror-like finish is sufficiently sharp to permit their use in a decorative motif.

Inprovement in Cube Trays

Aluminum ice cube trays, says Mr. Churchill, have undergone various improvements, the latest of which is the use of the Alumilite process to prevent staining.

Another recent application for aluminum in refrigerators is for interior screws. These are Alumilited, partly for corrosion resistance and good appearance and partly because the friction in the threads is reduced. The required driving effort is still further decreased by causing the Alumilite surface to absorb certain lubricants.

Cleaning and maintenance problems with aluminum finishes consist wholly of the removal of deposited dirt. No staining occurs because of any corrosion or chemical reaction of the metal.

Occasional wiping of the metal with a soft cloth will ordinarily maintain the appearance, but if closely adherent dirt collects on the metal, the use of cleansers of a mildly abrasive type, with a damp cloth, is sufficient to keep the Alumilited metal in its original attractive appearance. Strongly alkaline cleaners should not be used on an Alumilited surface, since such cleaners produce a spotted or cloudy effect on the finish.

Felt Products Develops Sponge Rubber Gasket

CHICAGO—A new refrigerator door gasket made from fabric-faced pure gum sponge rubber and cut from flat sheets of the material has recently been introduced by Felt Products Mfg. Co. of this city.

The fabric coating is said to provide a long-wearing friction surface and resists deterioration from grease, oil, or other causes. The rubber, being sponged, is in a sense, "ventilated" and, according to the manufacturer, does not attract or carry moisture.

This new gasket strip is bevelled or trimmed to a knife edge on one side, which is said to provide a good method of tacking, and also permits the making of perfect corners. To make the latter, a right-angled "V" is cut into the strip and extends only through the beveled portion.

Buyers Should Be Told How to Care for Porcelain Finish

By Kurt Groener, Managing Director, Porcelain Enamel Institute

IN the obscure origin of porcelain enameling, centuries before the Christian Era, we find historic proof of an exclusive attribute of this method of finishing metal—that of *durability*. By durability we mean that not only will this finish remain intact under ordinary and sometimes even extraordinary usage, but it will retain for countless years its original color and lustre.

Displayed in priceless collections in museums are porcelain enameled art objects in perfect preservation, though centuries old—many of them having been created long before Julius Caesar was a bare-foot boy catching mud turtles on the banks of the Tiber.

Technique Improved

Modern science has converted this ancient art into a modern industry. Research in the ceramics departments of universities, in the laboratories of manufacturers of porcelain enamel, and in many enameling plants have combined to replace the former prevailing rule of thumb method of enameling with a practical technique based on scientific facts. This technical progress has made its greatest strides in the past decade.

History of the use of porcelain enamel on steel refrigerator cabinets has been affected by other trends than the prevailing speedy trend toward greatly improved enameling technique. Of these trends, the most important is one born of and nurtured by the depression; namely, the trend toward lower priced merchandise. Such trends induce the use of substitutes, particularly when the use of substitutes is not apparent to the eye of the ultimate purchaser. It is significant that despite this trend, porcelain enamel remains the finish universally used on liners of steel refrigerator cabinets. The reason for this seemingly inconsistent fact is simple, even though it would seem that what is sauce for the goose (refrigerator interior) is sauce for the gander (refrigerator exterior).

Fused at High Temperatures

To begin at the beginning, *porcelain* enamel is a mixture of *inorganic* (mineral) materials, much the same as glass. It is fused at high temperatures, from 1,500 to 1,700° F., into the steel sheet—temperatures which would completely destroy any *organic* or vegetable substance.

Being made an almost integral part of its supporting metal and yet retaining on the finished surface all of the desirable attributes of a vitreous substance, the result is a product as strong as steel and as lustrous as glass.

Also, because of its vitreous nature, it is non-porous. This means that it will not absorb odor or food particles. Thus it is easy to clean, and if cleaned at regular intervals as every refrigerator should be, the result is a refrigerator which is always clean, sweet, and sanitary.

Having the strength of steel, the refrigerator cabinet lined with porcelain enamel on steel withstands daily use and abuse. And so, porcelain enamel is the standard finish for the interior of steel refrigerator cabinets.

Absolute color constancy; ease of cleansing; a long-lived, smooth, unbroken surface is achieved just as readily on the exterior as on the interior.

Instructions on Care of Finish

Which brings us to a very practical point. Isn't it a serious oversight in selling any merchandise not to emphasize to the purchaser those simple "do's" and "don'ts" which cause him to take reasonably good care of his purchase? The owner of a new automobile is instructed not to drive his car over so many miles per hour, for so many miles. The wearer of a new pair of tan shoes invariably buys a shine the first time out. And we don't go around our homes tossing hammers against the windows. We know better.

Likewise, it is a comparatively simple matter to explain the nature of porcelain enamel and to instruct the user in the utterly simple care it takes to keep the cabinet, inside and out, as clean and attractive and as sanitary for the years to come as the day it stood on the display floor.

Instruct her to wash the cabinet inside and out at regular intervals with warm water and soap or some recognized cleansing powder. Tell her that only severe abuse can damage the porcelain enamel finish on her refrigerator—and that you know that, as a good housekeeper, she will see that this is avoided.

Then tell her she needn't get excited if friend husband lets his cigarette burn down to the end while reposing forgotten on top of her refrigerator—that is, if it's porcelain enamel, because a little soap and water will remove the tell-tale mark. Tell her not to worry if grease spots should happen to get on the cabinet. Again the magic of soap and water on porcelain enamel will do the trick.

Durability Tests

A few simple, interesting tests may be made right on the display floor to emphasize the practical durability of a porcelain enameled cabinet. Merely place a lighted cigarette on the top of the cabinet and let it burn. Boldly streak any part of the cabinet with black crayon. Then remove the marks left in both instances with soap and water. Rub the finish vigorously with a rubber eraser. Nothing will happen to the glistening porcelain finish.

And the "piece de resistance" is to have the prospect attempt to mar the surface with the edge of a coin or pen knife.

In short, tell them what porcelain enamel *is;* demonstrate to them what its advantages are, and tell them to take care of it properly and simply. Make this a standard procedure with all refrigerator sales. The result will be satisfied customers, and first-rate word-of-mouth advertisers.

Careful Handling Necessary in Making Repairs on Cabinets & Hardware

WHILE the repair of cabinets may constitute only a very minor part of a service man's business, there are very likely to be occasions in which he is called upon to replace a gasket or hardware, or to re-hang a refrigerator door. The following suggestions on handling various types of refrigerator cabinet repair and reconditioning have been culled from the product manuals of various manufacturers.

If the door fit is bad, and there is considerable heat leakage through the door, it is quite possible that the hinges, or other hardware is loose or in bad shape. In case this is so, the hardware can be tightened up or bent in such a way as to allow the door to close properly.

A very simple test is recommended to show whether or not the door is fitting properly, and whether or not there is heat leakage. A piece of newspaper should be placed on the door frame the door closed on it. Should the paper pull out easily when the door is closed, the service man will know that there is a leak at that point. By placing paper around the door in several positions, he can get a pretty accurate idea of the entire fit.

Care in Replacing Trim

On cabinets where trim is used, care should be exercised in replacing the trim, in order to avoid chipping, which will result if the screws are drawn up too tight. A recommended practice is the placing of paper under the trim on lacquer cabinets to prevent cutting of the lacquer, which may result in the rusting of the panels.

In removing wood mouldings which are nailed on to the cabinet frame, it is deemed advisable to first drive the nails into the moulding with a nail punch, and then pry it loose in careful fashion with a flat chisel.

In replacing the moulding, the nails which held the moulding in place should be driven in at new points. All holes and crevices should be filled with putty, and the moulding refinished with a high grade, odorless spar varnish.

Replacing Gasket

Where it is necessary to replace a gasket on a wooden door type of cabinet, the first step is to remove the wood moulding on the exterior door panel and take off the old gasket. The service man should then start the replacement gasket at the center bottom edge of the door, fastening it to the door with non-corrosive staples or tacks, working around the door to the center bottom edge where he started. Care should be exercised in fitting the corners.

One manufacturer recommends that when replacing gaskets on doors, if the door is equipped with two gaskets, the inner gasket should be eliminated and the outer gasket only removed.

Recommended procedure in rehanging doors is to lay the cabinet on its back on a pad of some sort. The service man should see that the door is carefully centered in the center of the door opening, for failure to do this will result in a poor door seal, and will throw the latch and strike out of line.

If the holes for the screws and the hardware do not match up, it is advisable to replug the holes with wood and reset the screws, thus putting the hardware in the correct place, and holding the door in the proper position.

Increasing Tension of Gasket

As a means of increasing the tension of the door gaskets, shims can be placed under the latch, on the door side of the hinge. Doors that are loose at the top or bottom, on the latch side, can be tightened by placing shims under the butt of the hinge of the diagonally opposite corner.

After the service man has rehung or replaced the door, he should see that the gasket seals at all points.

If the service man, for some reason or other, cannot place the cabinet on its back when rehanging a door, he can get a correct center in the following manner:

Measure exactly the width and the length of the door opening and the door itself. Subtract the width of the door pane from the width of the door opening, and also the length of the door from the length of the door opening, and divide these figures by two. Then use two sticks which measure the width by one-half of the width of the door and door opening, and one-half of the length of the door and length of the door opening. These should be put on one side of the door opening and at the bottom of the door opening. In this way he has the exact placing of the door when he puts it on, and it will be properly centered in the opening of the cabinet.

In replacing hardware, it is recommended that shims should be set under the replacement parts to insure against chipping. Screws should be drawn up securely to insure a proper seal and prevent sagging of the door.

When the latch does not work automatically when the door is slammed, and the service man is certain that the door is properly centered on the cabinet, it may be necessary, on certain types of door latches, to adjust either the upper or lower lug of the strike. This should be done with a block of wood and hammer, with care being taken not to strike too hard, or chipping is likely to result.

It may be necessary to either raise or lower either of these lugs in this manner. The distance they should be raised or lowered is entirely dependent upon the way in which the latch engages with the strike.

Suggestions on the proper procedure for patching porcelain cabinets, and touching up lacquer finishes, were given in an article published in the March 6 issue of ELECTRIC REFRIGERATION NEWS.

However, some service men may want to completely recondition old cabinets, and where the lacquer finish is in bad condition, the cabinet can be dissembled and the old finish completely removed and replaced.

Where the proper equipment is at hand, the best way of removing the finish is to immerse the shell, outer door, and legs in a tank of boiling caustic soda solution in the concentration of 1 lb. caustic soda (sodium hydroxide) to 1 gal. of water. The finish should be removed after the cabinet has been in this solution about 20 minutes. All traces of caustic must then be completely removed by thoroughly washing the cabinet in clean, hot water.

Where equipment for such a process is not available, the finish can be removed with commercial paint remover or lacquer thinner. When paint remover is used, the cabinet must be carefully washed with oil-free naphtha or with lacquer thinner to remove all traces of the wax from the surface. Any trace of this wax will not only greatly increase the length of time required for the lacquer to dry, but will impair the durability of the finish.

Rust spots must be thoroughly sanded, as if any trace of rust is left on the metal, it will spread under the new finish. The entire clean surface should be lightly sanded and wiped with lacquer thinner just before the application of the primer. No threads or lint from the wiping cloths should be left on the metal.

Two-Tone Effect Used on Evaporator Parts

CHICAGO—Chromium combinations applied to brass, with soft and rich two-tone effect added to the aluminum in conjunction with the anodizing treatment, is finding favor as decorative metal parts for evaporator doors and tray fronts, declares W. W. Barry of the Crowe Name Plate & Mfg. Co. here.

MASTER SERVICE MANUAL

Chapter 9—Service

Use of Combination Gauge Set In Refrigeration Service

By K. M. Newcum

The preceding chapters have been prepared with the view of acquainting the service man with the function of all the different parts that go to make up a complete household electric refrigeration system.

This chapter is given to the study of service on the complete systems. The systems will be divided into certain classifications or types. Controling factor in classifying the types, is the type of throttle valve employed, as its particular function generally determines the proper diagnosis and remedy of the service complaints.

The large majority of conventional systems employ either the low side float valve, high side float valve or the automatic expansion valve. The systems then will be classified in the order that they come viz:

Type 1: Flooded system; low side float valve.

Type 2: Flooded system; high side float valve.

Type 3: Dry expansion system; automatic expansion valve.

Service instructions following are prepared on the basis that system 1, 2, and 3 incorporate the conventional reciprocating type of compressor employing three standard shut-off service valves located and labeled as follows:

Valve No. 1: Compressor suction line shut-off service valve, located on the intake (suction) port of the compressor.

Valve No. 2: Compressor discharge line shut-off service valve, located on the exhaust (discharge) port of the compressor and connected to the condenser.

Valve No. 3: Receiver liquid line shut-off service valve, located on or near the liquid receiver.

Where the flooded evaporator, using the low side float valve is equipped with shut-off service valves, they will be located and labeled as follows:

Valve No. 4: Evaporator liquid line shut-off service valve, located on the float valve header and serving as a connection for the liquid line.

Valve No. 5: Evaporator suction line shut-off service valve, located on the float valve header, and serving as a connection for the suction line.

Combination Gauge Set

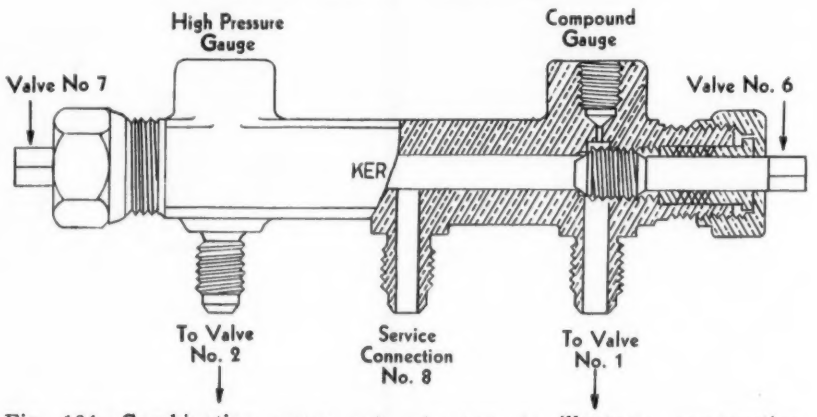


Fig. 134—Combination gauge set cut away to illustrate construction and marked to show connections to system.

76. Combination Gauge Set

All service instruction is given with the combination gauge set attached to the compressor service valves, as illustrated in Fig. 135. The use of the gauge set materially simplifies service operations.

The combination gauge set is a combination of two tee valves built into one valve body with the valve stems extending out on each end for wrench operation.

Fig. 134 shows the valve body cut away to reveal the internal construction. The high pressure gauge (0 lbs. to 300 lbs.) is installed in the opening on the left, or above valve No. 7 in Fig. 135. The compound gauge (0 lbs. to 30 inches) (0 lbs. to 60 lbs.) is inserted in the opening at the right or above valve No. 6.

The flare connection immediately below the high pressure gauge is connected to the gauge port of valve No. 2, by means of a ¼-in. O.D. copper tube. The flare connection immediately below the compound gauge is connected to the gauge port of valve No. 1.

Note in Fig. 134 that the gas passage, both high and low pressure, from the gauge ports of valves No. 1 and 2 is open at all times, regardless of the position of valves No. 6 and 7. The valve stems of No. 6 and 7 either open or close the gas passage to the combination gauge set service connection No. 8, Fig. 135, and do not close the gas passages to the gauges.

When properly installed, the pressure admitted to the high pressure gauge is accomplished by moving the valve No. 2 off the back seat. The pressure to the compound gauge is by moving valve No. 1 off the back seat.

When using the combination gauge set for checking pressures only valves No. 6 and 7 should be closed (turned all the way to the right), and combination gauge set service connection No. 8 should be capped off with a ¼-in. flare nut and copper flare bonnet.

To further acquaint the service man with the use of the combination gauge set, and to compare its use with that of the single gauges an example is given of adding refrigerant and purging, in which both set ups are used.

In adding refrigerant to the low side of a system, the single compound gauge is removed from the gauge port and a fitting inserted, to which a line is attached and connected to the refrigerant cylinder valve.

The cylinder valve is opened and used as a throttle valve to control the flow from the cylinder to the compressor, without the use of a gauge. When a quantity of refrigerant has been added the cylinder valve is closed and the line is disconnected. The compound gauge is then reinstalled to check the operating back pressure.

If an insufficient quantity has been added the gauge must again be removed and the charging line reconnected. Often it is necessary to repeat this exchange of gauge and fittings several times during one service call.

Assuming that too much refrigerant was added, which would necessitate purging at valve No. 2, the high pressure gauge would be removed and a purge line connected thereto. This purging would be done without a gauge.

Often it is necessary to repeat this exchange of gauge and fittings and lines several times on a service call. All of this requires extra time, and excludes the use of the gauges when they are most needed.

To perform the same operations with the combination gauge set installed as shown in Fig. 135, the refrigerant cylinder would be connected to service connection No. 8. The cylinder valve is opened wide. Valve No. 1 would be moved off the backseat, and valve No. 6 opened slightly to act as a throttle valve.

The gas would pass through the charging line, up through the gas port in the valve body, through and beyond valve No. 6 and down into the crankcase of the compressor. The pressure in the low side would be registering on the compound gauge, and the high side pressure would be registering on the pressure gauge.

When sufficient refrigerant has been added, which may easily be determined as both gauges are in use, the cylinder valve may be closed, allowing the compressor to draw the refrigerant from the charging line, gauge set, etc., down to 0 lbs. pressure, then closing valve No. 6. No gas will be lost to the atmosphere when the charging line is removed as it was drawn out by the compressor.

Should it then be necessary to purge, the purge line may be connected to service connection No. 8, and by opening valve No. 7 the high pressure gas and air is admitted to the atmosphere or neutralizing solution, until the pressure has been reduced to normal and the purging is completed. During all this period the pressure on both sides of the system is registering on their respective gauges.

When the service operations have been completed service connection 8 should be capped, valve No. 2 should be back seated, and valves No. 6 and 7 opened with the compressor in operation. The compressor will draw all the gas from the lines and gauge set, and then valve No. 1 should be backseated and the gauge set removed, without any loss of refrigerant to the air. The use of both gauges is the only successful way of diagnosing service complaints.

How Gauge Set Is Used

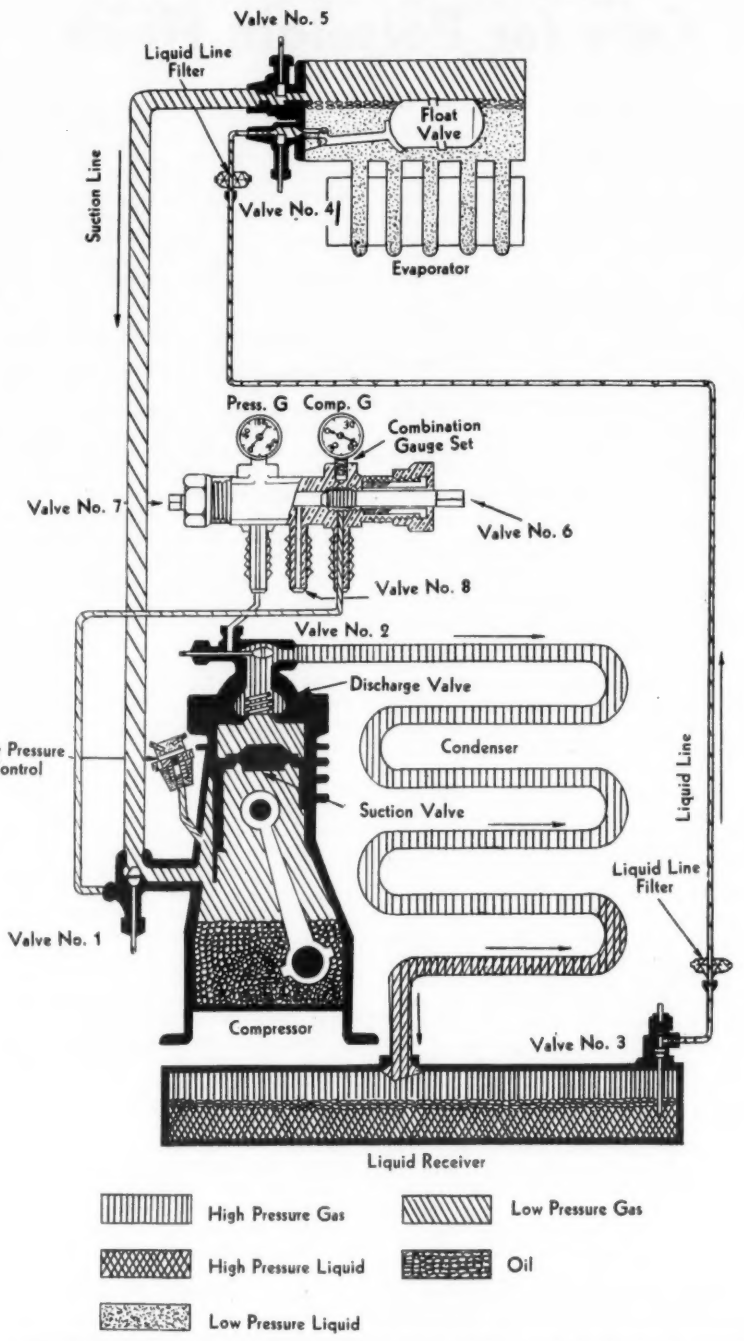


Fig. 135—Flooded system with low side float valve, low pressure control, and two evaporator service valves, showing use of gauge set.

First 6 Chapters of Master Service Manual Now Available in 112-page Booklet

Published in this issue is Chapter 9, Instalment 1 ("Service of Refrigerators") of the Master Service Manual, prepared by K. M. Newcum. The manual is being published serially in Electric Refrigeration News, the first instalment appearing in the April 10, 1935, issue. When all the chapters have been published in the News, the information will be put in book form, with considerable supplementary material.

This manual of information on the design and operation of present-day refrigeration systems will add to the service man's knowledge, and will assist him in meeting specific problems in servicing operations in the field.

Our supply of some of the back issues has been sold out. In order to meet the demand for the complete series we make the following offers to service men:

(1) Send $3.00 for a year's subscription to Electric Refrigeration News to start Aug. 28, 1935, and we will send reprints of all previous Newcum articles (the first six chapters of the book) in pamphlet form (size 6¼x8¾ inches).

(2) Send your advance order for a copy of the Master Service Manual, enclosing $3.00 to pay for the complete book, when published, and we will send you free of charge, reprints of all the Newcum articles published in the News up to and including Aug. 21, 1935. These reprints will be in pamphlet form (size 6¼x8¾ inches).

Following is an outline of the subjects and the dates of the weekly issues of Electric Refrigeration News in which the material was published:

Chapter 1—THEORY OF REFRIGERATION (April 10).
Chapter 2—PRINCIPLES OF MECHANICAL REFRIGERATION (April 17).
Chapter 3—COMMON REFRIGERANTS (April 24).
Chapter 4—CONDENSING UNITS.
Instalment 1: description of various compressor parts (May 1).
Instalment 2: stuffing box seals, flywheels, and direct-connected units (May 8).
Instalment 3: rotary compressors (May 29).
Instalment 4: care and servicing of shut-off valves and gaskets (June 5).
Instalment 5: condensers (June 12).
Instalment 6: liquid receivers (June 19).
Chapter 5—EVAPORATORS.
Instalment 1: flooded evaporators with low side float valve (June 26).
Instalment 2: high side float valves and flooded evaporators (July 3).
Instalment 3: automatic expansion valves (July 10).
Instalment 4: automatic expansion valves —continued (July 17).
Instalment 5: thermostatic expansion valves (July 24).
Chapter 6—CONTROLS.
Instalment 1: low pressure controls (July 31).
Instalment 2: low pressure controls—continued (Aug. 7).
Instalment 3: thermostatic controls (Aug. 14).
Instalment 4: thermostatic controls—continued (Aug. 21).
Chapter 7—MOTORS.
Instalment 1: repulsion start-induction run motors (Aug. 28).
Instalment 2: repulsion start-induction run motors (continued) and capacitor motors (Sept. 4).
Instalment 3: direct current motors and belts (Sept. 11).
Chapter 8—INSTALLATION
Instalment 1: installation of refrigerators (Sept. 18).
Instalment 2: correct use of fittings in making joints (Sept. 25).
Chapter 9—SERVICE.
Instalment 1: classification of systems and use of combination gauge set.

SERVICE

Control Valves Developed for Larger Compressors & Better Temperature Selection

By H. B. McLaughlin, Chief Engineer, Temprite Products Corp.

WHEN Temprite coolers were first developed the largest commercial condensing unit using sulphur dioxide was a ½-hp. unit. This limited the capacity of the cooler and also limited the capacity requirements of the control valve. As condensing units increased in size, so also did the control valves, the latest model having more than 10 times the capacity of the first model.

When beer cooling became a reality through the repeal of the 18th Amendment, more accurate temperature control became paramount. A control valve which would permit fluctuation in exit temperature of 4 or 5° was not satisfactory for beer cooling so Temprite engineers began studying new designs.

The latest model Temprite valve has seven degrees of adjustment. When placed on a cooler with a standard setting, the minimum exit temperature is 39° and the maximum exit temperature is 46°.

All materials which contact the refrigerant on this valve are forged brass, drawn brass, or stainless steel. The body of the valve is a drop forging; this makes all parts seepage proof.

Capacity of the valve is given in the following curves, see Fig. 2, model 750. This valve has a full opening almost as large as the opening in a ⅝-in. copper tube. The pressure drop through the valve when wide open is but slightly higher than the pressure drop through a ⅝-in. elbow. This low pressure drop is necessary in order to draw beer at all rates of draft without a temperature change of more than 1° above or below the desired exit temperature.

In order to get the compressor started promptly and before the exit temperature has begun to rise, the valve must open on a small differential. This valve is of the throttling action type and is equipped with a floating needle.

This is accomplished through a small spring device which permits the needle to move with freedom in any direction or to any angle necessary to fit the guide. This arrangement always permits the guide to have full control over the needle, thus eliminating friction which might be caused by improper alignment of springs, retainer, bellows, and seat.

When the cause of friction is removed, the slightest change of pressure will move the needle to a new position. When the valve is set for 8.6 lbs. (the pressure used on sulphur dioxide coolers, when set for 40°) it will open at 8.7 lbs. pressure, allowing a 0.1 lb. pressure to escape out of the cooler, this valve being sensitive to 0.1 lbs. pressure. Such a small change is hardly noticeable on the pressure gauge. All measurements of sensitivity are made with mercury columns in the laboratory.

When a cooler is used to cool water and the refrigerant temperature is 35° (3° above freezing point), and the control valve placed between the refrigerant in the cooler and the crankcase of the compressor, which may be operating at a pressure corresponding to 0° or lower, the control valve must assume a great responsibility and it must work quickly and surely to prevent a 3° drop in temperature.

Yet every day all production valves are set for 35° temperature (unless otherwise requested) and the cooler is guaranteed against freezing. The needle on this valve is equipped with a key which runs in a groove in the guide. This prevents the needle rotating in the seat. A given needle and seat might hold perfectly in one position but if allowed to turn, might leak badly in another position.

The larger the area of the seat the more this problem is magnified, even though the valve has a full ½ in. hole through the seat, inspection leak tolerance has a safety factor of nine to one. This means that the valve would have to leak nine times as much as the inspection department permits before the cooler temperature would drop 3°.

A valve might serve its purpose in all other respects but be objectionable because of the noise it makes while in operation. A valve that will open and close on a 0.1 lb. differential and one that opens up a ½-in. hole when the needle rises, would naturally be inclined to flutter or chatter.

The model 750 valve is equipped with a cylinder and piston which is completely submerged in oil; the oil must pass the piston as the valve opens and again as the valve closes. The rapid motion is dampened out, thereby eliminating all chatter. This dash pot operates very similar to the shock absorber on an automobile and it will forever prevent the pounding out of the seat.

This valve is available for sulphur dioxide, methyl chloride, and Freon. It has an exceptionally long range of adjustment. This valve may be set at any pressure between 26 lbs. and 15 in. of vacuum.

This feature opens up many fields of application. It may be used on any application where control of temperature can be obtained through regulation of suction pressure. The usual application is to control different temperature coils on a multiple system but the valve has been found so sensitive that it is frequently used on single installations where a closer regulation is required than can be furnished by the condensing unit control switch.

The valve operates equally well on either the flooded or thermostatic expansion valve systems or with a combination of the two.

Fig. 2 shows the capacity of the model 700 valve plotted against pressure drop in lbs. per sq. in. The pressure drop is very low when checked against the B.t.u. capacity. When the valve is carrying a 2-ton load it has a pressure drop of less than 2 lbs.

This valve has two adjustments: a knurled nut (A) which is for fine adjustments, and an adjusting cap (B), which is for coarse adjustments. Raising nut (A) raises the pressure at which the cooler will operate and turning it down lowers the cooling unit pressure. The knurled nut is held in position by a lock nut (C) which must be loosened before adjustments are made.

This valve is also available for sulphur dioxide, methyl chloride, and Freon. This is the valve used on small water coolers. A 15-lb. range of adjustment is available.

Temprite's Latest Control Valve

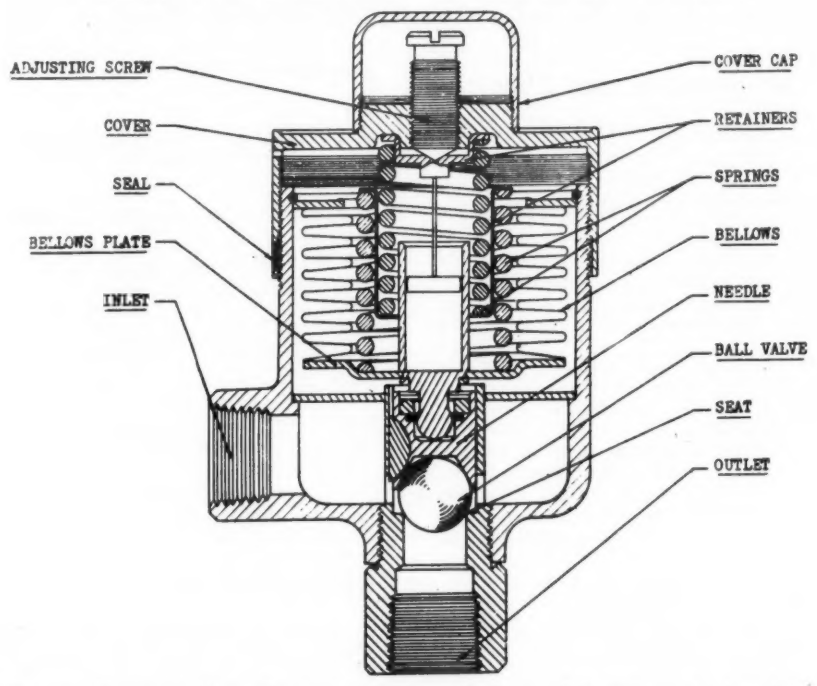


Fig. 1—Cross-section diagram of Temprite's model 750 control valve. Capacities of this valve are shown in Fig. 2.

Capacity of Control Valves

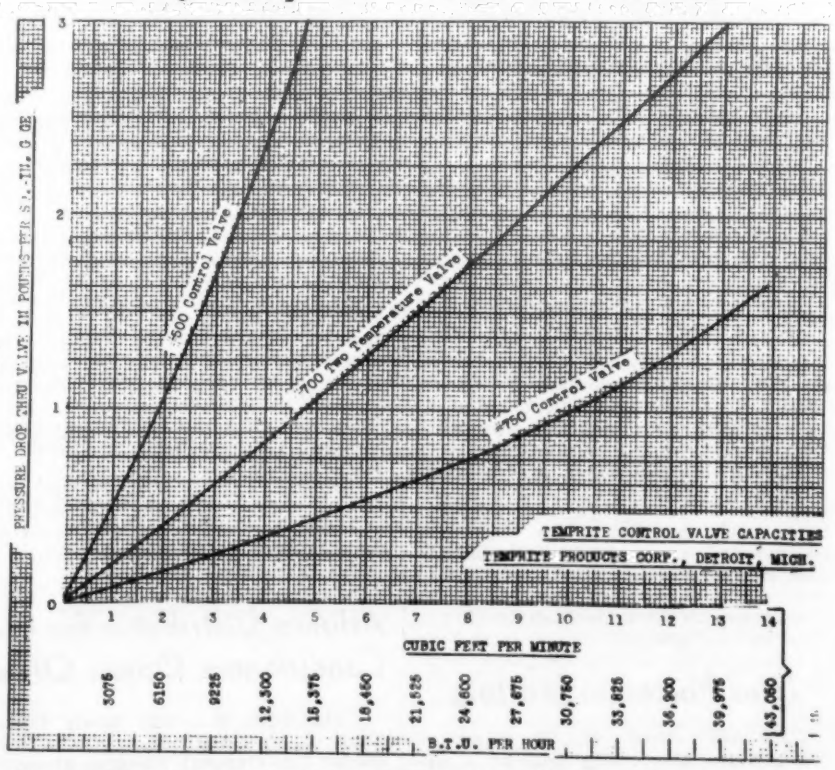


Fig. 2—The above graph shows pressure drop through Temprite control valves. Tests based on 36° F. refrigerant temperature in the cooler and 120° F. methyl chloride entering the cooler.

Controls Sealed by Service Men Against Tampering by Users

A SERVICE policy adopted by several large refrigeration organizations decrees that all controls such as pressure controls, thermostatic controls, thermostatic expansion valves, constant pressure valves, etc., are to be sealed by the installation man.

Should any of the seals be broken by either the customer or an unauthorized service man, the service guarantee of the job becomes void.

To aid in this service policy, Chief Engineer Joe Askin of Fedders Mfg. Co. points out that Fedders thermostatic expansion valves may be made "tamper proof" by removing the small screw in the adjusting thumb nut, as shown in Fig. 1.

The service man then places the screw in his tool kit.

Whenever called upon to readjust a valve the service man replaces the screw in the hole of the adjusting thumb nut (shown in Fig. 2), tightens it, makes the adjustment, and then removes the screw after the adjustment is made. In this way tampering with the valve may be avoided.

'Tamper-Proof'

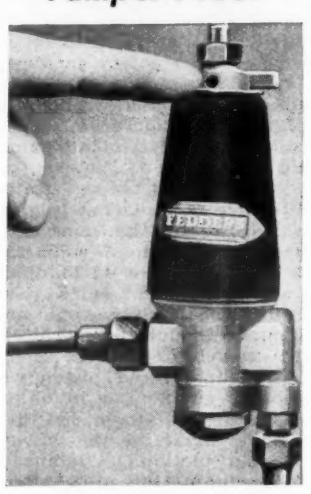


Fig. 1—By removing small screw in adjusting thumb nut, expansion valve is made "tamper proof."

Adjustable

Fig. 2—When necessary to make adjustments, service man replaces screw in adjusting thumb nut.

Westinghouse Dealer Sells Electric Kitchen for Model Display Home

ASHEVILLE, N. C.—By selling outright the equipment for an all-electric kitchen to be included in the "House of Tomorrow" built on the third floor of IXL Furniture Store, Fred Pearlman, Westinghouse dealer here, not only made the sizable sale, but also got his merchandise before the eyes of 3,000 interested home planners, and guests who visited the "House of Tomorrow" at it's opening.

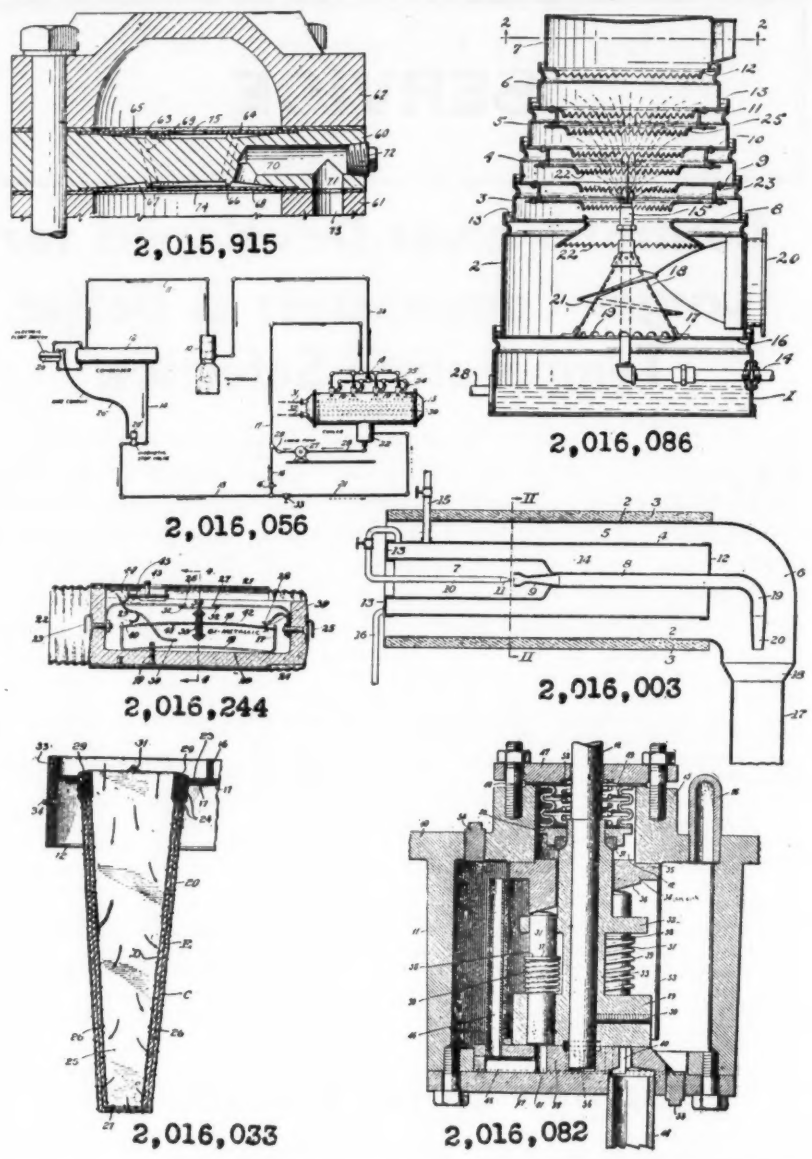
When it was advertised that IXL planned to feature an ideal home on its eleventh floor, competing dealers sought to equip the kitchen on a consignment basis, but Mr. Pearlman sold the equipment outright.

The house consists of kitchen, pantry, breakfast room, dining room, game room, master bedroom, nursery, bath, and dressing room. All are constructed of permanent materials and completely furnished.

A supplement to the *Asheville Times* was devoted exclusively to the "House of Tomorrow."

Joins Porcelain Institute

CHICAGO—Prof. R. M. King of Ohio State University has been appointed technical advisor to the Porcelain Enamel Institute. He will answer inquiries requiring the knowledge of a ceramic technician.



Advertising and Displays Promote 'Leonard' Week

CLINTON, Okla.—Successful promotion of a "Leonard Week" through the use of newspaper advertising and window displays by the Gambill Furniture Co., local Leonard electric refrigerator dealer, resulted in the sale of 12 new Leonards and many used refrigerators during the one week.

Centered about the slogan, "It's Leonard Week at Gambill's," newspaper advertisements were run the day before the special sale began the day it opened, and once during the week. Gambill's windows were painted with water colors and models displayed in the window.

As a special inducement for prospects to buy during the week the store gave extras such as double ice cube trays, rubber mats, refrigerator sets, water bottles, etc. with each Leonard purchased.

Rupert Gambill, head of the company, stated at the conclusion of the activity:

"This week was second to the largest Leonard week we have ever had and we are thoroughly convinced that a week's campaign like this pays big dividends."

Because of the success of "Leonard Week" in Clinton, the Gambill Co. held a similar sales drive for their sub-dealer, the Hanna Music Store, in Cordell.

Since there is no daily newspaper in Cordell, advertising of the campaign was done by handbill. Interest was aroused through the giving away of a rug, prospects having to register in the Hanna Store to get in on the prize drawing.

Two Leonards were sold during the week and more than 100 prospects secured, many of whom have been sold since.

Limits on Methyl Chloride Contents of Cylinder

E. W. McGovern of the R. & H. Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., who authored the article "How to Transfer Methyl Chloride to Small Cylinders," which was published in the Oct. 2 issue of ELECTRIC REFRIGERATION NEWS, has called our attention to the omission of one small, but important, sentence from the article.

The sentence omitted follows on the end of the article, and reads as follows:

"Among other provisions, the regulations require that the methyl chloride contents of a cylinder should not exceed 0.75 pounds for each pound of water capacity."

Atlanta Distributor for G-E Conditioners Opens Office

ATLANTA, Ga.—The newly formed General Air Conditioning Co., Atlanta dealer for General Electric air-conditioning equipment, has opened offices and showrooms at 160 Peachtree St. here, reports Hugh Richardson, Jr., general manager of the company.

PATENTS

Issued Oct. 1, 1935

2,015,915. VALVE STRUCTURE. Charles G. Adsit, Des Moines, Iowa. Application March 2, 1933. Serial No. 659,365. 6 Claims. (Cl. 277—61.)

2,016,003. HUMIDIFIER. John M. Gantvoort, Sewickley, Pa. Application Nov. 21, 1930. Serial No. 497,201. 15 Claims. (Cl. 261—14.)

2,016,033. AIR FILTER. Charles Christofferson, Duluth, Minn., assignor to Universal Air Filter Corp., Duluth, Minn., a corporation of Minnesota. Application Oct. 17, 1932. Serial No. 638,046. 2 Claims. (Cl. 183—50.)

2,016,056. LIQUID CIRCULATING SYSTEM. Norman M. Small, Waynesboro, Pa., assignor to Frick Co., Waynesboro, Pa., a corporation of Pennsylvania. Application Aug. 1, 1935. Serial No. 34,288. 10 Claims. (Cl. 62—126.)

2,016,082. REFRIGERATING UNIT. Henry E. Elrod, San Benito, Tex. Application March 14, 1930. Serial No. 435,889. 6 Claims. (Cl. 230—207.)

2,016,086. APPARATUS FOR COOLING LIQUIDS. Ernest F. Fisher, St. Louis, Mo. Application June 11, 1934. Serial No. 730,103. 18 Claims. (Cl. 261—79.)

2,016,244. THERMOSTAT. Eli E. Gregory, Brooklyn, N. Y., assignor to Spencer Thermostat Co., a corporation of Massachusetts. Application Oct. 27, 1925. Serial No. 65,218. Renewed June 18, 1934. 16 Claims. (Cl. 200—122.)

Announcement:

The "Introduction to the Master Service Manual" is now available in pamphlet form. This pamphlet of 112 pages, consisting of the first six chapters only of the complete book to be published on or about January 1, 1936, will be sent free of charge to those who send paid-in-advance orders for the MASTER SERVICE MANUAL, and with one-year new or renewal subscriptions to ELECTRIC REFRIGERATION NEWS.

Get Your Copy Now

Master Service Manual Order

Date.....

BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich.

☐ Please enter my advance order for the MASTER SERVICE MANUAL, and send me reprints (in pamphlet form) of the first six chapters as published in the weekly issues of Electric Refrigeration News from April 10 to Aug. 21, 1935. Enclosed is $3.00.

☐ Please enter my subscription to ELECTRIC REFRIGERATION NEWS to start with the issue of Aug. 28, 1935, and send me reprints (in pamphlet form) of the first six chapters of the MASTER SERVICE MANUAL as published in previous issues of the NEWS. Enclosed is $3.00. I understand that this does NOT entitle me to the **complete book** or **reprints** of future chapters to appear in the NEWS.

Name .....

Attention or In care of .....

Street .....

City ..... State .....

Remarks .....
(Please indicate products sold or principal line of business.) 10-16-35

Subscription Order

Business News Publishing Co.
5229 Cass Ave., Detroit, Mich. Date.....

☐ Enter my subscription to Electric Refrigeration News for one year (52 issues).
☐ Send the 1935 Refrigeration Directory and Market Data Book (2 volumes).
☐ Enclosed find remittance. (See rates above.)

Name .....

Attention or In care of .....

Street Address .....City and State.....

We sell the.....refrigerator and.....
(Please indicate other products or principal line of business.)
10-16-35

QUESTIONS

Parts Distributors

No. 2513 (Service Firm, Illinois)—"We are desirous of obtaining a list of those firms and people that handle electric refrigeration parts and service in the following states: Illinois, Indiana, Iowa, Michigan, Wisconsin, and Ohio.

"Could such a list be obtained?

"We wish to subscribe to your paper weekly. Please mail us your yearly contract form."

Answer: See advertisements on this page.

Manufacturers' Addresses

No 2514 (Manufacturer, Connecticut)—"Will you please send us the addresses of the following manufacturers: General Electric, Frigidaire, Westinghouse, Servel, Seeger, Coolerator, Raney, Louisville Tin & Stove Co."

Answer: General Electric Co., Nela Park, Cleveland, Ohio; Frigidaire Corp., Dayton, Ohio; Westinghouse Electric & Mfg. Co., Mansfield, Ohio; Servel, Inc., Evansville, Ind.; Seeger Refrigerator Co., Arcade, Wells, & Whitehall Sts., St. Paul, Minn.; Coolerator Co., Duluth, Minn.; Ranney Refrigerator Co., Greenville, Mich.; Louisville Tin & Stove Co., 1213 Maple St., Louisville, Ky.

Production Figures

No. 2515 (Manufacturer, Michigan)—"In order to properly lay our plans for 1935 production we are extremely anxious to secure production figures on the Frigidaire Corp. and Servel, Inc.

"It is our understanding that your company has available complete figures on the quantity of domestic refrigerators produced by both of these corporations and we sincerely hope that this information is open to subscribers.

"In the case of Servel, Inc., we would like to have statistics showing the number of domestic cabinets manufactured by them during the 1935 season. In the case of the Frigidaire Corp. we would also like this total figure, but if available would appreciate receiving from you a breakdown showing just how many of each model were built.

"Believe us when we say that these figures are very important to us. We sincerely hope that you have them available and that you can favor us with a complete report promptly."

Answer: We regret that we cannot furnish the information you desire, as manufacturers of household electric refrigerators do not make their individual sales figures public.

All available statistics on the electric refrigeration industry through 1934 are published in the 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK. Sales figures for the *entire industry* by months this year have been published in various issues of ELECTRIC REFRIGERATION NEWS, as the monthly sales totals are made available.

Food Chain Stores

No. 2516 (Manufacturer, New Jersey)—"Do you have a list of the food chain stores showing number of stores, headquarters, and proportion of stores in such chains which have meat departments?

"If you do not have this type of list, will you kindly advise whether you know where such a list could be secured?"

Answer: We do not have such a list, but suggest you try Food and Grocery Chain Stores of America, 809 National Press Bldg., Washington, D. C., an association of such enterprises.

Washing Machines

No. 2517 (Distributor, North Carolina)—"We would like to secure the names and addresses of the various manufacturers of washing machines and ironers. It is possible you have a data book showing this information. If so, kindly advise us the price or send us the names of the manufacturers."

Answer: We do not have a list of washing machine manufacturers, but suggest that you try the American Washing Machine Manufacturers Association, 80 E. Jackson Blvd., Chicago, Ill.

Oil for Iroquois

No. 2518 (Service Man, Pennsylvania)—"Will you kindly furnish me with further information concerning the Iroquois domestic refrigeration units of which there are several in this territory. Would especially like to know about the oil—what is it and what is its viscosity?

"As I am an interested reader of ELECTRIC REFRIGERATION NEWS I have the February 27, 1935 number on file, which gives service instructions on Iroquois units. Please send me any copy on the subject I may have overlooked."

Answer: We have searched through two Iroquois manuals without finding anything on what type of oil is used in the Iroquois refrigeration unit. Perhaps this information might be obtained by addressing the Barber Asphalt Co., 1935 Lewis St., Mercer, N. J., of which the Iroquois Electric Refrigeration Co. was a subsidiary.

Ice Box Sales

No. 2519 (Advertising Agency, Illinois)—"In your reply to our request for unit sales figures of household and commercial refrigeration for 1934 and the first eight months of 1935, I notice that you did not include figures for these years on ice boxes—that is, the ordinary (non-automatic) ice chests, and was wondering if this was omitted because I failed to make my request clear in my wire, or simply because you did not have figures or estimates on this item.

"Your 1934 REFRIGERATION DIRECTORY records 255,000 and 250,000 units respectively for 1932 and 1933. If you have figures available on ice boxes for 1934 and up to date in 1935 (first eight months), I would very much appreciate having them."

Answer: Figures requested on ice box sales have just been made available. See story on page 2 of this issue.

Service Reprints

No. 2520 (Service Man, West Virginia)—"Please advise me how I can obtain your publications—REFRIGERATION NEWS and reprints. Instructions on railway air conditioning."

Answer: We are not quite sure what you mean by "reprints" but believe you may mean reprints of our MASTER SERVICE MANUAL. This manual will consist of a compilation of the series of articles by K. M. Newcum published in the weekly issues of ELECTRIC REFRIGERATION NEWS, together with supplementary material, and will be published in book form.

We have not published any instructions on railway air conditioning, but have published a great volume of material on air conditioning, and will be glad to supply some back issues on the subject, with as many as possible touching upon railway air conditioning at a cost of 10 cents each.

Refrigeration History

No. 2521 (Student, Wisconsin)—"I am a student of a sales and advertising class at high school. I am about to give a sales talk on the refrigerator. I talked with a salesman today and he said he believed I could get all the information I neded from you. Please send me all the informaiton you can, especially on the history of refrigeration."

Answer: A review of the refrigeration industry by Editor George F. Taubeneck has been published on pages 267 through 296 of the 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK.

Air-Conditioning Jobs

No. 2522 (Manufacturer, Missouri)—"On page 41 of your REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK, Volume 2, you show a table of the summary of air conditioning installations in 30 cities.

"We have looked through your publications with the hopes of finding a table giving a part of the year 1935. If you have such data available, we would like to have a copy of it."

Answer: We have not published a table for part of 1935 for all the cities on which data was given in the MARKET DATA BOOK, but in various issues we have published data on eight major cities as follows: June 26, 1935—Newark, Chicago; Aug. 14, 1935—San Antonio, Tex.; Aug. 28—Baltimore, Chicago; Sept. 18—Houston, Oklahoma City, and Milwaukee.

Cooling Units & Evaporators

No. 2523 (Distributor, Belgium)—"We beg you to advise us about the possibility of giving us information re firms producing cooling units and evaporators, wanting export to Belgium or Europe in general.

"We have been busy hitherto in refrigerating and have up till now succeeded well with a German compressor.

"The facts are now that the general want of the clients here goes for American built machines and this incites us to try to obtain the representation of one of the numerous American compressors.

"Our firm being well known and having a good staff of dealers, we would be inclined to contract for a first year concession running up to 60 compressors.

"There must be a possibility, with your valuable aid, to obtain a representation of a good American compressor producer at the usual conditions of goods f.o.b. New York."

Answer: Manufacturers of compressors are listed on pages 192, 208, 220, and 251 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY. Manufacturers of evaporators are listed on pages 159, 168, 170, 173, 195, 199, 202, 206, 207, 216, 221, 252, and 255 of the same volume.

CLASSIFIED

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

A NATIONALLY KNOWN manufacturer requires a responsible manufacturers' agent or salesman with commercial refrigeration selling experience. Should have following with show case, beverage and water cooler manufacturers and chain grocery stores. Excellent opportunity to connect with one of the oldest and most responsible manufacturers in the industry. State in detail, experience, past affiliations, age, etc., and attach photograph. All applications will be held confidential. Box 735, Electric Refrigeration News.

WANTED: SALES ENGINEER. Fifty year old manufacturer with Detroit factory branch wants a man with a good sales record. Prefer engineering college graduate with knowledge of heating, ventilating and air conditioning in large building. Write letter stating age, business experience, and salary desired. Box 734, Electric Refrigeration News.

FRANCHISE WANTED

NEW YORK CITY service company desires manufacturer's service agency. Completely equipped shop, employing armature winders and machinists. Capable of doing any kind of repairs. Competent outside men. Well established; reliable. Can furnish highest recommendations. Invite investigation. Box 736. Electric Refrigeration News.

EQUIPMENT FOR SALE

ISOBUTANE: We offer purest and dryest Isobutane for the most exacting scientific purposes; in your 80 lb. cylinders at $0.75, in our 120 lb. cylinders, $0.70, in small lots at $1.00 per pound. The Standard Refrigeration Co. of Pittsburgh, 1138 Dohrman St., McKees Rocks, Pa.

NEW six hole double ice cream cabinets, portable type, complete with ⅓ HP new compressor units less motors. Size 30"x30"x60", at $85.00. Cabinet only at $60.00. New Penn thermostats, $4.00. Rebuilt and guaranteed 1 HP Frigidaire units complete with motors, $95.00. ½ HP at $65.00. All prices FOB our store. New Larkin, Bush, Frigidaire coils less than half price. Pioneer Refrigeration Equipment Co., 33 Warren St., New York City.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. Van Deventer (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

REPAIRS

HALECTRIC thermostat repair service. B & B, G.E., Cutler-Hammer, Penn, Ranco, Tag., etc. Expansion valves repaired. Gas service, Ethyl, Methyl, Iso-Butane, Sulphur. Your cylinder or ours. Competitive prices. Halectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

SCHOOLS

REFRIGERATION—AIR CONDITIONING (a.c.) Theory and practice taught thoroughly by our course combining class room and laboratory work. Our course teaches installation, servicing, estimating and engineering sales. Resident School. Inquiries or inspection invited. Part or full time courses, day or evening classes. Detroit School of Refrigeration, (a.c.) 6517-6519 Grand River, Detroit, Mich.